THE

THERAPEUTIC GAZETTE

INCORPORATING

MEDICINE AND THE MEDICAL AGE

A MONTHLY JOURNAL

OF

Practical Therapeutics

EDITED BY

H. A. HARE, M.D.,

Professor of Therapeutics and Diagnosis in the Jefferson Medical College,

GENERAL THERAPEUTICS;

AND

EDWARD MARTIN, M.D.,

Professor of Surgery in the University of Pennsylvania,

SURGERY AND GENITO-URINARY THERAPEUTICS.

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ORIGINAL COMMUNICATIONS.

SUBACROMIAL BURSITIS.

BY JAMES K. YOUNG, M.D., F.A.C.S.,

Associate Professor of Orthopedic Surgery, University of Pennsylvania; Professor of Orthopedic Surgery, Philadelphia Polyclinic; Orthopedic Surgeon to the Philadelphia General Hospital.

Of the large number of shoulder disabilities, by far the most frequent one is subacromial bursitis. Moreover this is an affection not frequently diagnosed by the practitioner. While this condition has been recognized for a long time, and clear clinical descriptions of it have been announced by Duplay, Putnam, Graham, and Küster, the best clinical and descriptive data have been given by Brickner and by Codman; and to the latter's articles on the subject I am indebted for some of the statements contained in the present article. As supplementary to these facts I have added my own observations, extending over a period of years, and including a large number of such clinical cases.

Anatomy.—The largest bursa about the shoulder-joint is the subacromial or subdeltoid bursa, situated between the upper portion of the capsule, the coracoacromial ligament, and the acromion, and extending downward beneath the deltoid muscle. Its apex is intimately united to the top of the humeral tuberosity and the tendinous expansion of the supraspinatus muscle, while its base is firmly attached to the under side of the acromion and the coracobrachial ligament. It is the loose periphery of the bursa which is movable, and which rolling on itself allows the roof to slide to the base. The size of the bursa, according to different writers, varies within wide range; but it may be set down as a safe statement that the bursa as a rule is about two and one-half inches in diameter.

The subacromial bursa does not usually communicate with the joint. When the bursa is the seat of inflammation the deltoid, which is one of the abductors of the arm, relaxes so that rotation or upward pressure is painless. When disease attacks the subacromial bursa, abduction and upward pressure occasion marked pain because the sac is squeezed against the humeral head, on the one hand, and the lower

FIG. 1.—Subacute bursitis, inflammatory type.

surface of the acromion and the coracoacromial ligament on the other.

Pathology.—Following an injury to the subacromial bursa there is an inflammatory reaction, resulting in an oversecretion, and this is followed by plastic adhesion and a

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thickening of the capsule. These adhesions are not only situated within the bursa, but are also on the exterior of the capsule, producing an adhesion between the bursa and the surrounding structures. The tendon of the supraspinatus at its attachment to the greater tuberosity of the humerus is often partially or completely torn.

Fig. 2.—Chronic bursitis, showing deposit in the supraspinatus muscle.

This injury is manifested by a depression over the seat of the rupture, or by the occurrence of a frayed-out appearance of the tendon at the insertion of the supraspinatus muscle.

Calcareous deposits are not frequently encountered within the sac itself, but are usually found beneath the bursa, as pointed out by Brickner, "in *or* on, and in *and* on, the supraspinatus tendon (Fig. 2), or occasionally the infraspinatus, near its insertion." It has been suggested that the lesion in the bursa may be of toxic or bacterial origin, but this has never been substantiated by pathological evidences. Tuberculosis of the bursa may occur, and Cone of Baltimore has reported an interesting study of infection through the agency of the gas bacillus.

As a result of the swelling of the bursa there is a prominence over the shoulder beneath the acromion process, and later this is replaced by a flattening of the shoulder due to muscular atrophy.

Symtomatology—According to the symptoms, two distinct forms may be recognized, an acute or spasmodic form and a subacute or adherent form (Fig. 1). A third variety is described by Codman under the name of chronic or the non-adherent form (Fig. 2).

Diagnosis.—This affection is characterized by a localized tenderness and swelling at the tip of the shoulder just below the acromion process. Abduction and external rotation are both limited. The scapula is locked by spasm, and after ten degrees of rotation have been obtained the scapula moves with the arm. There is pain over the point of the shoulder, sometimes extending down into the hand, and pain is sometimes referred to the point of insertion of the deltoid tendon. Fluctuation can at times be detected below the tip of the acromion and upon deep palpation. Swelling of the subacromial bursa may at times be detected and demonstrated by means of the Roentgen ray; not so much from the thickening of the walls as from the round, globular, clear space over the site of this

Acute.*	Subacute.	Chronic.
1. Local tenderness.	1. Tenderness may or may not be present.	1. Tenderness often absent.
2. Abduction of the arm followed by disappearance of the tender point (Dawbarn's sign).	2. Dawbarn's sign absent.	2. Dawbarn's sign present if tenderness is present.
3. Spasm.	3. Limitation of abduction and external rotation.	3. Abduction and external rotation with slight limitation.
4. Cannot raise the arm *unaided* without pain.	4. Scapula accompanies humerus.	4. Scapula does not accompany movements of the humerus.
5. Pain extending to hand.	5. Pain, same as in Type No. 1 (the acute form).	5. Pain, especially after use.
6. Swelling over the shoulder.	6. Cannot extend the elbow.	

*These tabulated lists are modified after Codman.

bursa and the fulness of the structures overlying the bursa as compared with the opposite side. Calcareous deposits beneath the bursa and at the attachment of the tendon of the supraspinatus, or beneath it, can readily be demonstrated by resort to the *x*-rays.

Differential Diagnosis.—Subacromial bursitis must be carefully distinguished from the following conditions:

Fractures of the tuberosity and of the anatomical and surgical neck of the humerus. These injuries are always accompanied by ecchymoses, early or late. There is swelling of the inner side of the arm. The presence of fracture can always be verified by the Roentgen rays. But when this is not accessible the cardinal symptoms of fracture assert themselves: mobility, crepitus, disability, and discoloration. The fracture most difficult of diagnosis, without the assistance of the rays, is the one that occurs in the same manner as injury to the subacromial bursa, as by falling on the fully extended hand; the fracture thus occurring is fracture of the lesser tuberosity of the humerus. This may also be diagnosed without the rays, by finding localized tenderness over the lesser tuberosity, which is followed in twenty-four hours by ecchymoses extending downward along the biceps muscle and tendon to the elbow.

Inflammation of the sheath of the biceps tendon. This produces symptoms closely simulating inflammation of the subacromial bursa. Some of the injured arms in ball players are of this character. There is localized tenderness along the course of the long head of the biceps, pain in the abductors and external rotator muscles. Pain especially in the beginning of abduction would suggest inflammation of the sheath of this tendon; pain being more frequently present in inflammation of the subacromial bursa in abduction beyond ten degrees.

Circumflex paralysis. Many cases of bursitis are incorrectly diagnosed as cases of circumflex paralysis. In circumflex paralysis there is inability to raise the arm and marked atrophy, and the paralysis may be verified by electrical tests. A simple clinical test would be in the voluntary effort of the patient to elevate the shoulder, when in case of circumflex paralysis there would be complete absence of muscular contraction beneath the palpating fingers.

Chronic arthritis. Of chronic arthritic conditions encountered in the shoulder-joint, the most common form is traumatic arthritis, due to injury of the shoulder in an individual who has an underlying infectious or toxic condition. The symptoms are tenderness over the great tuberosity and in the axilla, more or less complete loss of motion, some induration about the joint, and a "grating" or crepitus on motion.

Tuberculosis of the head of the humerus. The differential diagnosis of this affection from subacromial bursitis is difficult, because the bursa not infrequently becomes later infected with tuberculosis. In the earlier stages of tuberculosis there is local pain over the head of the bone, flattening of the deltoid, fixation of the joint by muscular spasm at first, and later by ankylosis, true or false. There is always a lesion associated in some other part of the body. The *x*-ray is the only possible means of making a correct diagnosis of the site and extent of the tuberculous disease. Abscesses form late in the affection; these are never present in subacromial bursitis.

Acromioclavicular arthritis. In this condition it is difficult to make a differential diagnosis where ankylosis has occurred and has been broken by traumatism. This has been observed by the writer, and the diagnosis corroborated by the Roentgen rays.

Prognosis.—The condition is much improved by an early and a correct diagnosis and operative treatment, since prolonged fixation frequently delays recovery. Patients often apply too late for efficient treatment. The prognosis where efficient treatment is instituted and where the operation has been performed is excellent. It has been suggested that since many of the patients suffering with subacromial bursitis recover without operation, by means of baking, electric-light baths, massage, etc., restoration to normal is not hastened by operation. But this has not been the experience of the

writer. Operation should first be performed, and subsequent efficient treatment will be followed by recovery.

TREATMENT.

Little benefit is to be expected from the application of local counter-irritants. Some benefit may result from relaxing the shoulder, and resting the arms on a pillow placed on a table, so as to relax the deltoid muscle. It is always unwise to fix the shoulder either by means of a bandage or a plaster dressing. The greatest benefit will be derived from an operation, which consists in opening the sac and draining it. This is known as the Codman operation, and is as follows:

General anesthesia is used, and the patient is placed in the dorsal position. The arm is flexed at a right angle, and the humerus is placed at the side, midway between internal and external rotation. The incision is made through the skin, from the top of the acromion process downward, two inches, the line of incision being over the external lip of the bicipital groove. The fibers of the deltoid muscle are separated, as in laparotomy. The cellular tissue beneath the muscle is lifted between two pairs of forceps and carefully incised. The serous lining of the bursa is first nicked and then enlarged upward and downward, the edges being clamped on each side. These clamps serve as retractors, while the humerus is rotated from side to side, exposing the interior of the sac. The inferior surface should always be inspected for deposits in the tendon of the supraspinatus muscle. If any of these deposits be found they should be carefully removed. Fibrous bands within the interior of the capsule should be divided with scissors or knife. It is not usually necessary to curette the interior. Neither the sac nor the deltoid muscle should be closed with sutures; but the skin should be closed with silkworm-gut sutures. The contents of the sac are allowed to escape in the surrounding tissues. The arm should be suspended by the wrist to the head of the bed for one week, unless the position becomes intolerable, after which the arm should be carried in a sling for a period of three weeks. The after-treatment should be begun with hot-air baking, massage, and manipulation. The manipulation consists in full and painless abduction of the arm performed by an assistant. The operator also rotates the humerus internally and externally. If the patient will not remain in bed, an abduction plaster splint may be applied to support the arm.

Excision of the subacromial bursa is an exceedingly difficult operation, and its performance is almost impossible under certain circumstances. Where the sac is clearly defined by inflammatory contents and sclerosis it may be possible to excise it. But in the usual clinical forms (described in this paper) incision and drainage are all that are necessary. As to the after-treatment: Four weeks after the operation the patient, having the arm extended upward for one week, and then for a period of three weeks carrying it suspended in a sling, is to have the part manipulated by means of massage and baking in order to hasten recovery.

Full and free movement of the shoulder may be finally accomplished by gentle manipulation; these manipulations, however, are not to be carried at any time beyond the point of tolerance of pain.

222 South Sixteenth Street.

CARDIAC SYPHILIS.

BY THOMAS E. SATTERTHWAITE, LL.D., Sc.D., M.D., NEW YORK.

Ricord, in 1856, was the first to give a definite description of cardiac syphilis, though its existence had long been known. Some four years later Virchow also wrote of it, while Lancereaux in 1866 classified it under four types.

Up to this time, however, the gummy tumor was the only criterion on which to base a diagnosis of the visceral disease, so far as the naked eye was concerned, although, like fibrous phthisis, it was known to be characterized by fibroid infiltration. Even as late as 1886 so keen an observer as Fagge had made the diagnosis in only four instances, though he had exceptional opportunities for seeing the various lesions of heart disease in the pathological department of Guy's Hospital during a long service there. His criteria were gummy tumor in one case and fibroid disease in three, so that his findings would not now have great weight, because fibrosis of the heart may be due also to rheumatism and other causes. Tuberculosis seldom attacks the heart walls, though it not infrequently invades the pericardium, more especially its external layers.

The frequency of cardiac syphilis was later indicated by the researches of Mracek and Kundrat of Vienna. They collected from the literature and their own experience 102 cases, based on the criteria of that day, and classified them as follows:

Myocarditis, gummatous	10
" fibrous	9
" gummatous and fibrous	8
Endocarditis	2
Pericarditis	1
Diseases of vessels	3
Myocarditis with or without endocarditis	15
Peri- and endocarditis	1
Diseases of myocardial vessels and myocarditis	1
Diseases of ganglia, etc	11
	61

Though gummas were found in as many as 27, or about 44 per cent, it must not therefore be concluded that this figure represents the comparative incidence of the gumma in syphilis. They were basing their diagnosis of the disease largely on the occurrence of the gummy tumor, and, to a less degree, on such other collateral evidence as was at hand. Gummy tumors are not really as common as these figures would imply, and they only occur in the late stages of the disease. But these statistics point to the fact, which has been confirmed by the known habitats of the spirocheta pallida, or treponema pallidum, discovered by Schandinn and Hoffmann in 1905, that the disease may invade any part of the heart or its coverings, and also the vessels adjacent to it. Thus far we have been in the habit of believing that the disease begins in the vessels or in the perivascular tissues, causing fibrosis in these situations, and, corresponding to the vascular network, a progressive induration of interstitial tissue in the organ. Such changes I noted as early as 1891, when, in an article on pulmonary syphilis, I stated that in this disease we may sometimes find naked-eye appearances like those of miliary tuberculosis; at other times, in presumably advanced stages of the miliary development, a peculiar fibroid induration, which I held to be the most common of the lesions of the disease, with associated clinical signs that had a certain degree of positiveness about them. I still hold to this view. At first the indurated tissue has a pellucid bluish appearance; later it becomes white and glistening, while a later development is the characteristic gummy tumor, whose appearance and characteristics are well known to us. These tumors I found chiefly in the middle or lower lobes of the lungs, the liver, or the kidneys. The same sort of gummy tumor occurs in the heart or its membranes.

At the same time I stated that in the progress of the disease there was the same tendency to thickening and degeneration of vessels, implication of lymphatics, and production of fibroid tissue, as in fibroid tuberculosis. Indeed, before the bacillus tuberculosis and the spirocheta had been discovered, there seemed to be no way of distinguishing between these miliary formations. In so far as the larger vessels are concerned, Dr. W. H. Porter of this city

had previously found them sometimes the seat of hyaline changes, and his views had been accepted by two of our most prominent pathologists. Two years later the implication of the vessels, both large and small, was described *in extenso* by the late Dr. Leonard Weber of this city.

In this connection it is worthy of notice that the aorta is the subject of an affection first described by Döhle in 1885, and called by Chiári mesoaortitis. It has quite recently enlisted a good deal of attention. Richter, describing it as an inflammation of the middle coat of the aorta, situated usually about one and a half inches above the semilunar valves, says:

"The valves are usually not involved, but the coronary arteries frequently suffer from secondary conditions resulting from aortic changes, from retractions and partial occlusion, to which an obliterating arteritis of the coronary vessels may be added. Deep scars result, star-shaped, with a thinned wall offering lessened resistance to blood-pressure and giving rise to aneurism. Or, in other cases, flat plaques, slightly raised, with fine folds covering the surface, or thick fibrous patches are seen. They may extend down to the thoracic aorta; often they remain isolated and small. They are quite characteristic, since the endothelium is not directly involved; occur with preference in younger persons, and cannot be mistaken for arteriosclerotic processes. The mesoaortitis syphilitica may be further characterized by the presence of gummata. In purely syphilitic cases the intima is *never* implicated primarily in the process."

Longcope has found from his experience in a large number of instances that the disease is usually slow, averaging sixteen or seventeen years.

More recently our attention has been called by Warthin to the occurrence of parenchymatous changes in syphilis, as well as the interstitial variety, and as a result of its harboring the spirocheta. His pathological studies have led him to hold the view that cloudy swellings of the solid tissues, degeneration, atrophy and necrosis can be the result of localization of the specific germs in the parenchyma, producing parenchymatous changes that are quite independent of the interstitial or fibroid that have been described.

But hereditary as well as acquired lues may affect the heart. Mracek found it four times in 150 autopsies of infants. Fischer never saw but one case in a large experience. Waldstein up to 1905 had never seen a single case in the Babies' Hospital of this city. Buschke and Fischer found the blood and tissues of the viscera, including the heart, infiltrated with the spirochetæ in an infant three weeks old, the disease being congenital, of course.

As one might suppose, the gumma is more common in the male sex, and usually occurs between the ages of twenty and forty. It varies in size, and is usually found in the ventricles, but may be found in the auricles, septa, or papillary muscles, or, in fact, anywhere in the heart. It is usually multiple, and the nodules, as we commonly recognize them, are from the size of a pea upward. It may dissolve and break down, and discharge into the cavities of the heart or outside of it, causing a cardiac aneurism. If cicatrization follows a gumma, there will be atrophy of muscle fibers in the adjacent territory; and if there is a general sclerosis extending from the thickened vessels, there will be general atrophy of the muscle. If the gumma is near the periphery of the organ, the sclerosis will extend toward the surface, and may leave a point of thickening. In the same way valvular deformities may be produced by the deposit of a gumma in the valve. Its dissolution, with subsequent puckering, from loss of substance in the valve, or a defect due to a gumma in a tendinous cord or papillary muscle, may cause distortion of the valve and incompetence or obstruction, or both. In any case, whether in the heart or adjacent vessels, its disappearance is apt to be marked by a scar with puckering of the tissues, usually stellate, often yellow-stained, that to the trained eye indicates with a very fair degree of certainty its luetic character.

Though the gumma at first is of a pearly-gray color, and enclosed in a pretty firm

fibrous capsule, if hemorrhage ensues it becomes red, and later yellowish, provided it undergoes change or breaks down and discharges. Under these circumstances the central material is fatty or sticky, the latter when it undergoes a mucoid rather than a fatty change. It is this mucoid substance which sticks to the fingers and gives its name to the gummy tumor.

But whatever the change is—that is, whether it undergoes absorption or discharges its contents—the capsule contracts, hardens, and assumes a whitish color; and if the material has been discharged from the center it leaves a depression, looking like a depressed cicatrix, from which bands of fibrous tissue radiate outward. The center is apt to be stained a yellow color. In general these peculiar changes depend on larger or smaller gummy tumors, originating along the line of the vessels and spreading throughout the organ.

It follows from all this that such tumors or even aneurisms are apt to be multiple; but, as already said, the difficulty of recognizing any syphilitic lesion, except the gummy tumor or the fibroid infiltration immediately connected with it, is very great, so that endocarditis, pericarditis, or myocarditis occurring in syphilis, and as seen at autopsies, is likely to be attributed to something other than lues.

As the close connection between this disease and the blood-vessels is an established fact, in well-advanced heart syphilis we naturally expect to find sclerosis of the coronary arteries. And yet we should not therefore impute all coronary disease to syphilis, though, as the heart is a favorite nidus for the specific germ (Warthin, *Jour. of the Amer. Med. Assoc.*, March 9, 1912), it is more likely to cause coronary sclerosis in syphilis than anything else. Syphilis is not, however, the most common cause of arteriosclerosis.

A diagnosis at the present day should be based upon a previous history of syphilis, often in a patient who has been treated by the regulation methods of former times, with mercurials and the iodides, until no visible, palpable, or subjective signs of the disease have remained. In fact, it may have lain dormant ten, twenty, or even thirty years (Richter, *loc. cit.*). The most distinctive diagnostic signs are arteriosclerosis; a weak, arrhythmic pulse, frequent or infrequent; dilated heart, angina, aortic dilatation, or aneurism; valvular disease, usually aortic; finally, the Wassermann or other luetic reaction.

Babcock has found that most cases of aortic regurgitation of the vascular type, as distinguished from the endocardial, are to be regarded as syphilitic.

The late Huchard held that angina was one of the most important signs; in the second stage it was of the false type, in the third of the true type.

But the results of therapeusis afford most valuable aid in diagnosis. Some years ago I had under my care a physician of New York, past middle life, who gave no subjective or objective signs of syphilis, but who had suffered from chronic cerebral pains in connection with his cardiac disease. A thorough course of mercurials and iodides, together with Nauheim baths and exercises, put him on his feet, and he is now, or was at last accounts, actively at work.

In this latter respect I find I am quite in agreement with Brooks and Carroll. According to their conclusions from an analysis of 200 cases, cardiac symptoms appear in most cases of syphilis. Though they may appear in the second stage, they usually are not discovered until the third stage. To quote these writers: "The signs differ from those of idiopathic or simple cardiac cases in a greater tendency toward the involvement of the heart muscle and the coronaries. Precordial pain is probably the most constant symptom, and among the earliest. This is often definitely anginal. Cyanosis, dyspnea, and other signs of cardiac incompetence are usually present long before true incompetence is evident. The greater number of cases show combined aortic and mitral lesions, in the way of endocardial involvement. Recognition depends primarily on the diagnosis of lues and the association of a cardiac defect, either of a

definite or supposititious nature. Wassermann reaction, etc., finds its place in the diagnosis of the primary lues, but the most conclusive and important diagnostic test is the therapeutic one."

So far as the Wassermann reaction is concerned, Babcock found it accurate in 15 out of 16 cases, or 93.7 per cent. There is of course an element of uncertainty about it. It has been found to fail in 50 per cent of the cases of latent syphilis, in tabes dorsalis and alcoholism, or when the condition is masked by antiluetic treatment. At the same time, he holds, a positive Wassermann may be found in cases of recent malaria, yaws, or leprosy. In these doubtful cases it may be necessary to do lumbar puncture, and examine the cerebrospinal fluid as well as the blood. Excepting under these unusual circumstances the Wassermann seems to be reliable. And yet the therapeutic test alluded to is hardly less valuable; for in latent cases, after a thorough course of mercurials and iodides for the later stages and salvarsan for the earlier ones, the relief of the luetic symptoms is so pronounced as to seem little less than miraculous. And it is quite comprehensible, now that we know not only that the heart muscle is the favorite seat for the colonization of the specific germs, but that they are said to collect there early in the second stage of the disease.

The discovery of the spirocheta pallida has not only revolutionized our previous knowledge of syphilis, but has made our diagnosis, prognosis, and treatment more effective. Not only is syphilis a more common disease than was suspected, but in a certain number of cases it is the actual cause of death from heart implication. Cabot, in a total of 562 cases of heart failure reported by him, has attributed 74, or about 13 per cent, to syphilis. Breitmann, Mracek, and Julien have made it 33 to 50 per cent, after strenuous exertion, bicycling, hot or cold baths, excesses in wine or venery, even after forced defecation. It is to be noted that these statements correspond with the contention that the disease is less dangerous here than abroad. Runeberg's statistics indicate this; he found that in the experience of a single life insurance company, out of 734 deaths at least 84, or about 11 per cent, were of persons who had contracted syphilis. Twenty-two of these deaths were attributed to progressive paralysis, and 33 to disease of the central circulatory system (the heart and aorta), 24 of the latter dying of syncope; so that the danger of death from a syphilitic heart or aorta appeared to be greater than from syphilitic disease of the central nervous system, and sudden death was the result. In looking over my private cardiac cases, some years ago, I found that syphilis was positively present in about 5 per cent, and probably present in another 5 per cent; the inference being that in cardiac disease we should suspect that syphilis is a factor in at least 10 per cent of the cases.

The prognosis is bad, but not altogether so. If the diagnosis can be made early, and the proper treatment instituted and maintained wherever any indication of the disease is apparent, some success may be expected. Even in advanced cases, where, for example, there is tabes dorsalis, improvement can sometimes be effected. Yet notwithstanding that we may be able to remove the deposits by medicine, usually a something will remain, so that if the part resumes its physiological activity, it still may not be sound pathologically.

Cardiac syphilis is more common than has been supposed. Like syphilis of the lungs, it exists, and the physician who fails to appreciate either of them falls short of his duties as a practitioner of medicine. In fact, neither heart nor lungs should be examined without always holding in view the possibility of syphilis as the cause of the disease. Where it may not be possible to make a positive diagnosis, a probable one can be reached. Appropriate treatment will confirm it. Cardiac syphilis is an insidious disease, and its manifestations are neither pronounced nor distinctive. A cure may be possible, while relief is probable, if the lesion is not too far advanced. If in such cases the physician fails to recognize the existence of syphilis, he should not be sur-

prised if his patient is carried off without warning, by sudden heart failure.

Treatment consists in the use of salvarsan, the iodides, and mercurials, and if there has been a positive Wassermann it should be continued until a negative is obtained. Afterwards the treatment should be along the line of therapeusis in other cardiac affections. It must, however, be borne in mind that there are some dangers connected with the use of salvarsan, especially if injected intravenously. This was early pointed out by Ehrlich, and has subsequently been emphasized by Babcock and Daland. So far as personal experience is concerned, I hold that as a rule mercury should precede the iodides, or at least it should form a part of the treatment.

I usually begin with the biniodide of mercury, in 1/16-grain doses, and continue it until the gums show the effect of the mercury. For external use I prefer the oleate of mercury, in strength of from 5 to 10 per cent. After the system has been made to feel the effect of the mercury, I begin with the saturated solution of the iodides, using at first the iodide of sodium and then the potassium salt, until the urine shows iodine, and the characteristic effects of the iodies are indicated by running at the nose, a coppery or salty taste in the mouth, and relaxation of the bowels. In the cases I have seen it has not been necessary, as a rule, to use the enormous doses I have given in cerebral syphilis. But if necessary, I should not hesitate to give the iodides in doses up to six drachms per day, as is sometimes the way in Europe. When I have given iodine internally in tablets with nuclein, I have not been obliged to exceed six grains per day. In very exceptional cases, in which treatment by salvarsan, mercurials, and the iodides is not effectual, I should not hesitate to use Zittmann's decoction; I have known it to be successful under such circumstances.

Brooks and Carroll, after studying three hundred cases, the largest number that has thus far been analyzed, came to the following conclusions:

"1. Cases of heart involvement in early syphilis may be fully cured irrespective of the character of the lesion by vigorous specific treatment alone and independent of circulatory measures.

"2. Even well-established and late cases usually respond to treatment with cure, or marked though perhaps temporary benefit.

"3. In most tertiary instances purely circulatory measures produce but slight benefit unless preceded by or combined with specific medication.

"4. Interrupted or inefficient treatment establishes an immunity or resistance on the part of the lesions against the specific drugs employed. Hence the importance of vigorous and carefully systematized treatment.

"5. The most satisfactory treatment is one which combines the use of salvarsan with mercury and the iodides. Combined treatment *may* be unnecessary in early cases, but is essential in late ones.

"6. Salvarsan, preferably old salvarsan, produces in most instances the quicker results. It is capable, however, of inducing serious symptoms, and in untried cases of heart involvement it should be administered in small doses until its action has been ascertained, particularly in those lesions characterized by disturbances of rhythm.

"7. Mercury alone may produce apparent cure. Best effects are secured with this drug when its form is from time to time changed. Its use appears to be indispensable in all well-established cases.

"8. The iodides are valuable adjuvants in the treatment of these cases, especially in their late stages, but they are apparently without specific action.

"9. Permanent injury to the heart must be assumed to have taken place in late cases, even though prompt response to treatment and apparent cure occurs."

Finally, in any case of cardiac syphilis we should bear in mind that the heart is likely to be only one of several organs involved. For it is upon the internal organs—the lungs, liver, kidneys, and brain—that the disease is apt to spend itself, more particularly in the later stages.

It should also be fully realized that while

the duration of an attack may be brief under favoring circumstances, it may last for years, and, in fact, for the most of one's life, during which time it will require constant supervision and unremitting attention if serious disasters are to be avoided.

REPORT OF A CASE OF TETANUS SUCCESSFULLY TREATED WITH ANTI-TETANIC SERUM.

BY FRANK BIRD, M.D., VALDOSTA, GA.

The object in reporting this case of tetanus is to reiterate my views and suggestions in a paper published in the THERAPEUTIC GAZETTE of January 15, 1916, entitled "Report of a Case of Tetanus," advocating larger doses of antitetanic serum.

The case that I am now reporting was the worst that I have ever seen, and the recovery was complete. I wish to make an effort to standardize the treatment. I consider antitetanic serum the best treatment as far as my experience goes (having never used the magnesium sulphate treatment), and when the antitetanic serum fails to cure it is probably due to the fact that the physician's fear of serum sickness, anaphylaxis, and other toxic reactions causes him to give a dose which is too small to be effective. This fear is of minor importance when we consider the desperate character of the disease, and my personal experience goes to show that if we apply the axiom "Desperate cases require desperate measures," we shall have the keystone to the treatment of tetanus.

Well-defined tetanus is a short-lived disease, and we have been in the habit of thinking when meeting it that the patient would probably die.

The following case is interesting in several respects. One of the first points is that small doses of antitetanic serum merely hold the disease in check by neutralizing some of the toxins; second, that untreated tetanus rapidly proves fatal; third, that large doses of serum check the disease absolutely and prove rapidly curative by combining with all the toxins already formed, and leaving enough antitoxin in the system to neutralize any toxins that may be formed later, thus causing an immunity.

December 14, 1915. Patient, J. S., aged eleven years, school-boy, living ten miles in the country, in perfect health up to the present attack.

First day. At noon-time he started to get on a horse, and he stepped backward, falling. He began to have muscular spasms of face and stiffening of the legs. I saw him an hour after the attack began. He was lying on a bench in the schoolroom, unconscious. He had been given an enema and bowels moved freely. The spasms of the muscles of the face indicated severe pain. The teeth were clenched and uncovered by the lips, the angles of the mouth being drawn backward. He was groaning. The abdominal muscles were tightly contracted. The right leg was somewhat stiff during the spasm, the left leg relaxed. The pulse-beat was normal in character, rhythm, and frequency, except during the attack, when it was increased. The body temperature was normal. I was unable to say what was the matter with him, as I had never seen any condition with a beginning as peculiar as this. However, I gave him morphine, grain one-eighth, by hypodermic injection, and left instructions to call me at seven o'clock and report his condition. I also requested that he be given a dose of castor oil some time during the afternoon if possible.

At seven o'clock I received a message to the effect that the patient was much worse, the spasms being more frequent, more severe, and lasting longer. They also said that the whole body was involved. I saw the patient one hour later and found this condition to be true, and immediately saw that I was dealing with a case of tetanus. The jaws were locked, the teeth clenched, and the spasms caused a contraction of all

the voluntary muscles of the body. However, the muscles of the left leg were not nearly so much involved as those of the right one. Upon questioning I learned that the boy had dropped a knife on his toe four nights previously. Examination showed a very slight skin abrasion covered by a healthy scab. When I arrived back in town I found I was able to obtain only three thousand units of antitetanic serum, as the stock had been taken up from the drug stores for exchange a few days before. However, I administered this amount by spinal puncture into the subarachnoid space, ten hours after the beginning of the attack. Chloral and sodium bromide were given per rectum for the sedative effect. A brother of the patient was instructed to go to a neighboring town the next morning in an automobile and get more serum while I telegraphed for a supply. He could obtain only six thousand units.

Second day. In the morning the patient showed some improvement. The spasms were shorter and not so severe. In the afternoon, however, his condition was about the same as it was the night before. The spasms were very severe and he was still unconscious. During the spasms there was trismus, frothing at the mouth, cyanosis, increased frequency but diminished volume of the pulse. A spinal puncture was made and some spinal fluid removed; then three thousand units of antitetanic serum were injected. Three thousand units were also given into the buttock of the right side in an effort to intercept some of the toxin on its way to the spinal cord.

Third day. There was apparently no improvement in condition regardless of the treatment given on the second day. At 10 A.M. he was in a state of almost continuous tonic spasm. The right leg was extended and stiff; it could be bent by manual force, but always elicited a new spasm, and from the facial expression during manipulation it must have caused great pain. Severe spasms came on every three to seven minutes. A towel was constantly needed to wipe away froth from his mouth. Pulse too rapid to count. During spasms the whole body and face was convulsed, and the patient presented a terrible picture. The disease had been so severe that he could hardly be recognized as the same boy. The neck was stiff, and raising the head would inevitably excite another spasm. The lungs were filled with mucous râles, and there was gurgling in the throat.

The serum that had been telegraphed for arrived, but it seemed to me that it was useless to give it as I thought the boy would surely die. However, I injected twenty-six thousand units directly into the median basilic vein (having previously warmed it to body temperature), also four thousand units into the subarachnoid space, and three thousand units into each buttock. At this time the temperature was 104° per rectum. Camphor was given by hypodermic injection every four hours to stimulate the heart. Four hours after the injection of the thirty-six thousand units of antitoxin the patient was so greatly improved that it was hard to believe. The violent, convulsive spasms had entirely ceased. The neck and right leg were still rigid and jaws locked, but other muscles tonic. His temperature was 97.4°. He was still unconscious, but pulse and respiration were greatly improved. All frothing at mouth had stopped, but mucous râles were still audible in lungs. There was apparently no pain, except as evidenced by a feeble groan when a slight spasm came on.

Fourth day. In the morning he showed still more improvement. In the afternoon he began to talk deliriously about seeing snakes and crows and eating crow soup. He begged his father to keep the snakes off of him and to kill them. No sleep and no rest that day. Morphine, grain one-fourth, was given. No spasms and no trismus were present. Later on in the afternoon he was occasionally able to recognize members of his family. He moved his head about and focused his eyes upon imaginary objects in the room. The neck showed some stiffness when head was brought toward chest. As I believed that the delirium was caused by increased intracranial pressure I made a spinal puncture to relieve it, withdrawing

55 cubic centimeters of spinal fluid. I also injected 3000 units of concentrated antitetanic serum.

Fifth day. In the morning the patient recognized all members of his family, and was even able to take some water through a tube. The neck was still slightly stiff. Hallucinations were present occasionally.

Sixth day. No spasms. Sleeping most of the day.

From this time on the patient improved rapidly. He took liquid nourishment and slept most of the time. No pain present except from hypodermic injections of camphor. In a few days he was able to sit up, and later to walk around. He made an uneventful recovery, no trace of the terrible disease remaining.

No effort was made to feed patient through mouth or nose. Nutrient enemas were given throughout the course of the disease, some being retained and others expelled.

My conclusions from this case are practically the same as those drawn from the last case reported in the THERAPEUTIC GAZETTE, namely:

First, in all suspected cases of tetanus an immunizing dose of antitetanus serum (1500 units) should be given into the buttock. If tetanus has already begun it will surely develop further.

Second, trismus and spasms are sometimes the first definite indications of tetanus, coming on after a wound has practically healed, as in this case, but in about a third of the cases the first muscles to be involved or to show rigidity are those in the vicinity of the wound.

Third, any rigidity occurring in a part following a wound should excite suspicions of tetanus, and at least an immunizing dose of antitetanus serum should be given or treatment begun at once.

The condition tetanus is caused by the action on the nerves of toxins liberated by the tetanus bacilli, the most poisonous of these toxins being tetanospasmin. The purpose of treatment is not so much to destroy the tetanus bacilli, but to neutralize its powerful toxins and destroy its union with the nervous system.

Fourth, bacteriological examination of discharges for purposes of diagnosis is a useless waste of valuable time. The symptoms and history are more reliable and save time. The incubation period varies according to the amount of toxin in the system and the individual susceptibility to this toxin. It is usually from two to five days.

Fifth, in the treatment of developed cases one large dose of antitetanic serum is more reliable and saves more time in the treatment and does a greater amount of good than several small ones frequently repeated. Consequently at least fifteen thousand to twenty-five thousand units should be given (warmed to blood temperature) into the blood stream under aseptic precautions for an adult dose, and three to nine thousand concentrated serum into the subarachnoid space. If a chill should occur following the injection (which is not the rule), give a hypodermic injection containing morphine grain one-fourth, with atropine grain one hundred and fiftieth. Nothing is so effectual as the above in stopping a chill. If no improvement in symptoms is noted in twenty-four hours, repeat the above dose. In cases further developed coming under observation with a history of repeated spasm, risus sardonicus, trismus, and the outlook poor, give five to fifteen thousand units concentrated antitetanic serum into the subarachnoid space and twenty-five to thirty-five thousand units into the blood stream at once, and repeat in twenty-four hours if indicated. Before giving the injection into the spinal canal allow about as much spinal fluid to flow out as the amount of serum which you intend to inject. This gets rid of some of the toxin as well as making space for the antitoxin.

Sixth, anaphylaxis appears to be less liable to develop after a single large dose than after repeated doses.

Seventh, fever is an uncertain symptom. It may or may not be present.

CLAW-FOOT OR CLAWED TOES.

BY ARTHUR J. DAVIDSON, M.D., PHILADELPHIA,
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One of the most distressing and crippling of all of the deformities that are seen in a large orthopedic clinic is that condition which is commonly known as claw-foot or clawed toes. The condition is practically that of multiple hammer-toe of a varying severity affecting several or all of the toes of one or both feet.

In the early and mild cases the toes merely assume a faulty position of dorsal flexion which is easily capable of full correction, but which position is habitually restored as soon as a corrective force or a voluntary effort is removed. There is an associated flattening of the anterior arch of

FIG. 1.—Clawed toes. (Hoffman.)

the foot when the toes are in flexion; this entirely disappears on weight-bearing or when the flexion is corrected. In this type there are no structural changes or contractures. The deformity is of posture only.

In the moderately severe cases, in which the postural deformity has been allowed to exist untreated over an indefinite period of time, the toes are flexed to a greater degree and the depression of the anterior arch is conspicuous. In attempting to correct the flexion of the toes it will be found that the dorsal flexor tendons are contracted and inhibit complete extension. The metatarsal heads are depressed and prominent on the sole of the foot. The foot appears shorter and thicker in front. Callosities will have formed on the sole of the foot under the

FIG. 2.—Clawed toes. (Hoffman.)

transverse arch. The patient will find difficulty in obtaining a comfortable shoe and will complain of pain in the forefoot in the region of the metatarsal arch.

In the most severe types the toes are strongly dorsiflexed at their metatarsophalangeal articulations and plantar-flexed at their interphalangeal joints. They are retained in this position not only by shortening of tendons, ligaments, and other soft structures, but also by bony changes of their articular surfaces due to the prolonged

FIG. 3.—Paralytic type, clawed toes. (Hoffman.)

continuation of faulty position and function. There results a complete dislocation of each metatarsophalangeal joint. The proximal phalanx articulates at its base with the dorsal surface of the head or neck of its metatarsal bone, and, as a result of

its vertical position, pushes the head of the metatarsal down into marked prominence on the sole of the foot. Thus the entire transverse or anterior arch of the foot is reversed and the front part of the foot much thickened.

The prominence of the unprotected metatarsal heads on the sole of the foot causes great distress to the patient. Large and painful callosities, and occasionally

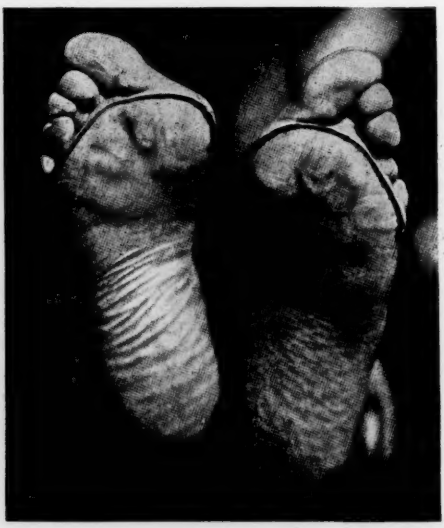

FIG. 4.—Line of incision. (Hoffman.)

ulcers, form over these points of pressure against the sole of the shoe; at the same time the upper leather of the shoe presses upon and irritates the prominent and flexed interphalangeal joints. The toes are so tightly contracted that their function is entirely arrested, the foot loses most of its elasticity, and the gait becomes slow and guarded. The patient walks mostly on the heels, protecting the forepart of the foot at each step. In many instances the patients will have the leather tip removed from the shoe to give freedom and relief from pressure to the contracted toes. In other cases shoemakers have attempted to make especially adapted shoes with depressions in the inner sole into which the heads of the metatarsal bones are supposed to rest. At the best this is only palliative.

The deformity usually becomes progressively worse. In the severe cases the patients are almost bedridden; each step is so painful that they dread to place any weight upon the forepart of the foot on account of the extreme tenderness under the metatarsal heads. In one of the writer's cases, a patient had tolerated this condition for almost twenty-five years, and when operation was advised the patient willingly consented, and remarked that if relief could not be obtained by any other method he would willingly submit to amputation of both feet, so great had been his suffering.

ETIOLOGY.

It is doubtful if clawed toes are ever congenital. In some instances a tendency to this deformity is observed in several members of the same family. This is best

FIG. 5.—Clawed toes. Left foot before operation. Radiogram by Dr. W. F. Manges.

explained by the occurrence of a type of foot, the conformation of which is more readily susceptible to the deforming compression of the modern fashionable shoe.

By far the most common cause of this deformity is the habitual wearing of short, narrow shoes of the pointed-toe type. High, narrow heels have the same tendency.

In these cases there is usually an associated hallux valgus, often of an exaggerated degree. In many there is a permanent contracture of the tendo Achillis. As a result of the high heel, short, narrow-toed shoe, the foot is placed in a position in which the weight-bearing is brought forward of the anterior arch and the toes are thrown into dorsal flexion. The inactivity of the

FIG. 6.—Clawed toes. Right foot before operation. Radiogram by Dr. W. F. Manges.

plantar muscles disturbs the balance that normally exists between them and the dorsal muscles. The uplift of the toes that results later becomes permanent.

Some few cases are caused by contractures following paralysis, especially mild unrecognized cases of infantile paralysis. These are often unilateral and are associated with pes cavus (hollow-foot).

TREATMENT.

In the mild and in many of the moderately severe cases, marked improvement can be accomplished in an attempt to restore muscular balance and function to the intrinsic muscles controlling the action of the toes and forefoot. All faulty footwear should be first discarded; this includes all forms of supports, metal or elastic, tight and improperly shaped shoes, as well as short or tight stockings. There is no doubt that, at times, improperly fitting stockings have a decidedly detrimental effect upon the development and functions of the toes and foot.

A shoe should be worn that allows ample room for the toes to be spread to their fullest extent without compression. A flexible low shoe with a thin sole and low heel, or no heel at all, is preferable when a shoe is worn. Whenever possible a moccasin should be substituted. The contracted tendons should be forcibly stretched at regular intervals, and the patient instructed in a course of exercises for the toes and feet to stimulate muscle function and to establish the proper balance between the flexor and extensor action. The stretching of the tendons may be facilitated by the application of heat in the form of baking, which aids in the softening and relaxation of the contracted soft parts.

All forms of rigid support should be discouraged. There are times, however, in painful and spasmodic cases when temporary support, in the form of adhesive plaster strapping, may be of advantage. This should be used with the understanding that it is of temporary benefit only, to relieve pain, and the sooner discarded the better for the best interests of the patient in view of an ultimate cure.

Cook's anterior heel is, at times, used in this connection. This consists in the introduction of a rigid wedge of leather placed between the two layers of the sole leather of a shoe in a transverse position, just posterior to the position occupied by the metatarsal arch of the foot; the object being to relieve the weight-bearing from the metatarsal arch and transfer it to a posterior position, at the same time having a tendency to throw the toes into plantar flexion. While the anterior heel does, at times, relieve pain and possibly places the foot into a better position, it is only palliative in action and does not in itself promote function or tend to cure.

In a certain number of cases, in which the deformity appears to be due solely to a marked shortening of the dorsal flexor tendons, it is advisable to release the contractures by multiple tenotomies, after which the toes should be splinted until the divided tendons have completely healed in their elongated position, and then be followed by strenuous efforts at muscle reëducation for the promotion of muscle balance and function. In any case in which the foot is impeded in function by a short tendo Achillis, a tenotomy of that structure is indicated.

Many ingenious tendon operations have been devised, by as many surgeons, each with the object of restoring the anterior arch of the foot by tendon transferences. Corrective osteotomies of the metatarsal bones have been advised by other operators. Each method has its advantages in some cases and its limitations in others.

The method that has been employed for several years by the writer, in the department of orthopedic surgery in the Jefferson Medical College Hospital, with the greatest satisfaction for the relief of the severe cases of clawed toes, has been an operation first described by Dr. Phil Hoffman.[1]

The operation consists in the excision of the heads and, if necessary, parts of the necks of the metatarsal bones of all of the affected toes. Hoffman advises a single transverse curved incision just behind the web of the toes. The skin and fascia are reflected and the metatarsal heads exposed. The metatarsal heads are very superficial, due to their faulty position, and are easily accessible. The plantar incision permits free inspection of the parts and readily enables the operator to determine the amount of the metatarsal head and neck that must be removed to permit the phalanx to fall into the proper alignment with its

FIG. 7.—Clawed toes. After Hoffman operation. Radiogram by Dr. W. F. Manges.

[1] An Operation for Severe Grades of Contracted or Clawed Toes. *American Journal of Orthopedic Surgery*, February, 1912.

respective metatarsal. Sufficient bone should be removed to relax all contractures and to permit of free motion and proper alignment between the base and the proximal phalanx and the metatarsal stump. The bones are divided by the usual straight bone-cutting forceps or a narrow chisel. Hoffman strongly emphasizes the importance of removing sufficient bone. Experience has proven that it is wise to remove the entire head of the metatarsal and a considerable part of the neck.

Tenotomy of the flexor or extensor tendons is unnecessary as they are sufficiently relaxed by the shortening of the metatarsus. The tendons are placed to one side when the bones are removed, and care should be taken to avoid wounding them.

The skin incision is closed in the usual manner. Sterile or wet alcohol dressings are applied. The toes are separated and retained in the desired position by placing small pads of gauze between each toe. No splint or fixed dressing is used. The stitches are removed in about eight to ten days. Passive motion to the toes is started at the tenth day and continued for several weeks. The patient is allowed to walk in about three weeks.

The results have been remarkably good. The incision, being close to the web of the toes, brings the resulting scar into a position that is not irritated by walking. The feet are painless, and with joints that are freely movable and capable of the usual amount of function. The operation shortens the foot to a slight degree, but removes the rigidity and thickness of the forefoot. By removing the metatarsal heads the sole under the anterior arch becomes soft, and there is no longer a tendency to the formation of callosities. Weight can be borne comfortably by the transverse arch and the gait becomes normal.

Claw-foot treated by this method of operation does not have a tendency to recur, and the relief afforded is permanent. In one case, referred to above, of twenty-five years' standing the operation was performed about five years ago. The patient is now employed as a foreman in a large factory, and his occupation necessitates his being on his feet most of the day, frequently climbing upon scaffolds. He has not suffered the slightest pain or inconvenience from his feet since leaving the hospital.

200 South 12th Street.

BLOOD TRANSFUSION: REPORT OF EIGHTY-FIVE TRANSFUSIONS.

In the *Canadian Practitioner and Review* for October, 1916, Unger reports on his experience and discusses the various methods used by different physicians. As to those methods which utilize anticoagulants, he thinks the best anticoagulant is sodium citrate. Although the technique is simple, the blood to which an anticoagulant has been added is not in every case as valuable as whole unmodified blood. As to the question of possible chemical changes there are two important points which Unger refers to:

The effect of the intravenous use of citrated blood on the coagulation time of the patient's blood. Dr. Libman, Dr. Richard Weil, and Dr. Ottenberg have each reported the following: The injection of sodium citrate alone or with blood will promptly shorten the coagulation time of the patient's blood. Within twenty-four hours, however, it will either return to what is normal for this particular patient or be prolonged. If subsequent injections are given the coagulation time either will be immediately markedly prolonged or it will be primarily shortened, but within twenty-four to forty-eight hours, instead of returning to the patient's normal coagulation time, it will be markedly prolonged. If, during the period of lengthened coagulation time, the patient should begin to bleed, the result, theoretically at least, might be serious. It has not been determined that the shortened coagulation time will arrest hemorrhage, nor on the other hand that the lengthened coagulation time will prolong it.

The second fact that Unger wishes to report is the frequent occurrence of chills, high temperatures, and vomiting, following citrate transfusions. The exact percentage

of cases in which these symptoms occur he cannot state because a sufficient number of cases have not as yet been reported in the literature. Dr. Richard Weil suggests that they may possibly be due to intravascular clotting. He bases this view on the fact that if to 10 Cc. of blood, to which has been added 1 Cc. of 2-per-cent sodium citrate (0.2-per-cent solution), 10 Cc. of saline is added, clotting will occur. Dr. Lewisohn thinks that these symptoms are rather due to chilling of the blood during its transfer from donor to patient. Another theory is that they are symptoms pointing to the toxic action of citrated blood. The chief value of citrated blood lies in: (1) it can be carried to the patient in cases to which it may be impossible to bring a donor; (2) it can be preserved and given in divided doses or kept for an emergency.

In the 85 transfusions which Unger has done by his method there have been no chills due to the transfusion. In one case in which the tests for hemolysis and agglutination had been omitted, a chill due to hemolysis occurred. In eight cases there was a rise in temperature ranging between 101° and 104°.

From the point of view of the technique of the method, all of the 85 transfusions done by Unger's method were successful. If we consider the cases as they were influenced clinically and follow the classification adopted by Dr. Libman and Dr. Ottenberg, the results were as follows:

Successful Cases.—(1) Twenty-two and one-half per cent of the transfusions were done on cases in which the prognosis was extremely bad and in which transfusion saved life. This group is divided into (*a*) those who completely recovered (9.5 per cent). The transfusions were for post-operative hemorrhage, bleeding of the newborn, intra-abdominal hemorrhage, bleeding duodenal ulcers, ruptured ectopic gestation. (*b*) Those in whom the underlying condition (13 per cent) continued. The transfusions were for bleeding gastric ulcer, intestinal bleeding, pernicious anemia, severe secondary anemia, purpura hemorrhagica.

(2) Thirty-nine per cent of the transfusions were in cases which were improved or cured, but in which the prognosis at the time of the transfusion was not desperate. Some of these were cured while others were improved, but the underlying condition continued.

The transfusions were for hemophilia, pernicious anemia, aplastic anemia, Von Jaksch anemia, lymphatic leukemia, Henoch's purpura, carcinoma of stomach, carcinoma of head of pancreas, ulcerative colitis, pylephlebitis, sepsis, dysentery, parenchymatous nephritis, intense secondary anemia (preliminary to an exploratory operation), persistent uterine hemorrhage, bleeding ulcer of small intestine, chronic interstitial nephritis with rectal bleeding, ruptured ectopic gestation.

Of the 85 transfusions, 52 (61 per cent) were successful from a clinical point of view. Nineteen of the successful cases (22 per cent of the entire 85 transfusions) were life-saving.

Unsuccessful Cases.—(1) Eight per cent of the transfusions did little or no good, although from the nature of the disease a good result might have been possible. These were cases of pernicious anemia, hemophilia, purpura hemorrhagica, and coal-gas poisoning.

(2) Nine and one-half per cent of the transfusions were followed by temporary improvement, but subsequently the patient succumbed to the original disease. These include cases of hemorrhage in typhoid fever, bleeding gastric ulcer followed by a very radical operation, carcinoma of the stomach, pernicious anemia, actinomycosis with bleeding from multiple hereditary family telangiectases.

(3) Twenty-one per cent died of some disease necessarily fatal, and in which transfusion could not have been expected to do much good, but was employed as a measure of last resort. These include cases of uremia, empyema with intense toxemia, actinomycosis of the lung, carcinoma of stomach, carcinoma of colon, ulcerative colitis, subphrenic abscess, acute hepatic insufficiency, acute salpingitis with peritonitis, pemphigus, acute lymphatic leukemia.

EDITORIAL.

SPLENECTOMY AND TRANSFUSION IN PERNICIOUS ANEMIA.

Pernicious anemia is fortunately a comparatively rare disease, but those who practice in large cities not infrequently come in contact with it and recognize that, like certain forms of tuberculosis, its progress may be slow, but, nevertheless, a fatal issue is inevitable. Much has been done to add to our knowledge of the pathological conditions which underlie its existence, but as yet little has been accomplished in determining its underlying cause. Up to within a few years it was thought that the administration of arsenic produced better results than any other plan of treatment, often appearing to arrest or abate the disease for a considerable period of time. More recently good results have been obtained by hypodermic injections of cacodylate of sodium, and, still more recently, various surgeons and physicians have attempted to arrest or cure the malady by removing the spleen.

It would appear that the results which have been obtained from splenectomy are so good as to make this procedure worthy of careful consideration in all cases, and, if the operation is not delayed until the state of the patient is desperate, its danger is not so great as to cause timidity in the face of the otherwise inevitable progress of the condition. If splenectomy can arrest or cure Banti's disease, in which it will be recalled there is also marked cirrhosis of the liver and sometimes ascites, it may fairly be concluded that in pernicious anemia, in which such important lesions do not exist, the chance of recovery is greater. Splenectomy has also been employed in a number of cases of so-called hemolytic jaundice with sufficiently good results to justify its consideration in that disease, which is not surprising when the probable close association of these two maladies is considered, for it will be recalled that no less an authority than Eppinger is of the opinion that the only material difference between pernicious anemia and hemolytic jaundice is that in the latter disease the bone-marrow is able to compensate for the destruction of the blood cells, a compensatory function which seems to be absent in pernicious anemia.

In those instances in which the anemia has become profound the danger of operation, as we have already pointed out, is naturally increased and the chances of recovery from the anemia are also diminished. In such instances it would appear that transfusion may prove a valuable measure. It is by no means a new thing to attempt transfusion in this disease, and, when it has been attempted, not rarely the patient's condition has been materially improved, but, as a rule, for only a short time, since the blood of the donor is simply an addition to the blood of the donee, and possibly is exposed to the toxic or degenerative influences which have destroyed the patient's own blood. The speedy relapse of the patient when transfusion has been tried has discouraged physicians from commonly resorting to it. Here, again, in many instances, transfusion has not been attempted until the patient is so far advanced in the disease as to be a hopeless case.

When splenectomy is performed it would appear that the removal of this organ tends to prevent the rapid destruction of the blood of the donor. In other words, splenectomy seems to remove the active factor in the maintenance of the disease, and if in addition the patient receives repeated transfusions of whole blood from the same donor, or from other donors whose blood has been proved not to produce hemolysis in the donee, excellent results are achieved. That is to say, splenectomy and repeated transfusions are the needful agents in many of these cases. The time for additional transfusion is determined by the tendency on the part of the patient's blood to relapse into its former condition.

It must not be thought that we are taking the attitude that in splenectomy and repeated transfusions a cure of pernicious

anemia has been found. The only thing that can be said concerning these measures is that at the present time, particularly in association with arsenic, they seem to offer more promise than any measures which have so far been brought forward.

THE CURE OF ARTHRITIS BY INDIRECT EFFECT.

It has become increasingly evident during the last decade that the various forms of arthritis, acute and chronic, are widely different as to their etiology, even if it be true that the result to the patient is identical, in the sense that disability or impairment of movement is induced. It must also be borne in mind that, even if we deal with this subject under a somewhat crude nomenclature, we have to recognize that in some instances the pain, or discomfort, from which the patient suffers is due to a bursitis, a synovitis, or an actual involvement of the articulating surfaces of the joint—in other words, involvement, or active disease, of the cartilaginous surfaces. All these conditions were supposed by physicians of forty years ago to depend upon some diathesis, usually gouty or rheumatic in nature, and even acute articular rheumatism was, at that time, supposed to be a local manifestation of a perverted nutritional change which resulted in the production of an excess of acid in the body. We now know, as we have just stated, that while these conditions are undoubtedly in some degree responsible in certain cases of arthritis or synovitis, even in these cases there is often an associated infection, and it is yet to be determined whether the infection is a primary factor, or whether it is secondary to the underlying condition of the body.

The discovery that these joint conditions frequently develop as the result of the entrance into the blood stream of pathogenic microörganisms, by way of the tonsils or through some solution of continuity in the blood-vessels or lymphatics, has resulted in a very thorough search for pathogenic organisms in such patients and an equally thorough search in the hope of discovering the opening through which they have gained access. It having been recognized that the gonococcus in the urethra or the streptococcus in the tonsil not infrequently enters the blood and causes an arthritis or endocarditis, or both, it was a natural step to jump to the conclusion that a considerable proportion of arthritic cases owe their existence to the entrance of pathogenic germs from the intestine, particularly from the large intestine, and so it has come to pass that, at the present time, many surgeons are devising and carrying out operative procedures designed to permit of colonic irrigation, to establish drainage, or, by means of short circuits, or the removal of so-called kinks, to improve the condition of the large bowel with the hope that dominant symptoms in the joints will be relieved.

There can be little question that these measures have been carried much too far. It is quite true that certain patients have been markedly improved and possibly made well after convalescence from the operation has been completed, but it would be interesting to know how many of those persons who have been subjected to such radical surgical methods, which distinctly belong to the realm of major surgery, have not been benefited, either because they have died from the operation, or operative sequela, or because, having recovered from the operation, they find themselves no better as to their arthritis, and considerably worse as to their digestive tract. We think that many of the men in the profession, who are perfectly willing to be radical in case of need and who are also conservative in the sense of good judgment, are convinced that many of the various operations which have been performed upon the sigmoid and colon have been disadvantageous rather than otherwise.

In discussing this operation with those who are suffering from obscure joint affections the following points should be borne in mind: First, the immediate danger of the operation; next, the secondary dangers;

and third, the various forms of abdominal pain and discomfort, which the physician often sees after the surgeon considers his patient well. It should never be forgotten that it is difficult to imagine a more unhappy state than one in which the surgeon has induced an abnormal condition of the bowels in a patient whose joints are too stiff for him to beat a hurried retreat.

Another question which is of interest in this connection, and which has some bearing upon the method by which a so-called cure is induced, is as to whether the improvement is really the result of arresting the entrance of pathogenic organisms into the system from the intestine, or whether the improvement does not arise from the administration of the anesthetic and the shock of the operation, which, to use a homely simile, may be likened to the effects produced in a watch when it is struck a blow. In other words, these procedures sometimes result in such a disturbance of metabolism, or of the nutritional processes, as to cause a complete change, which may be for good and which may be for evil.

Some months ago we called attention to a series of researches upon the effects of injecting various protein substances into persons suffering from different infectious diseases, like typhoid fever and pneumonia, as well as those suffering from various forms of infectious arthritis. It will be recalled that these investigators showed that a fairly large proportion of such patients, particularly the arthritic ones, often showed marked improvement from such injections, although there was no relationship whatever between the protein injected and the microörganism which was responsible. Is it not possible that in some of the cases of arthritis which have been benefited by operative procedure of a radical nature the change for the better which has ensued has been due to what is practically an injection of foreign protein, since, under the knife of the surgeon, vessels are opened and albuminous, or protein, substances have an opportunity to enter the vessels in an even more direct way than when subcutaneous injections are used, and possibly over a longer period of time than when intravenous injections of a foreign protein are employed? It may be true that these substances which gain access to the blood-vessels are not foreign in the sense that they had had their origin from another source than the body operated upon, but they are foreign in the sense that they belong to the tissues outside the vessels and are not normal constituents of the blood in the vessels.

We think it is probably a fair statement of the case to assert that there is a small percentage of primarily obscure cases of arthritis which can be benefited by intestinal operation, but no such operation should be attempted until every other source of infection has been thoroughly hunted for and absolutely eliminated, nor should it be tried until every hygienic method and mode of cure has been given a sufficient trial to enable the physician to assert that nothing else will hold any promise of doing good.

Finally, in some cases at least, it is only proper to inform the patient of the possible results of the operation, as to adhesions, obstructions, and other conditions which may necessitate one, two, or three subsequent operations. Cases of this kind are sometimes, though rarely, reported in the journals. On the other hand, it is not uncommon to find so-called cured cases reported with much enthusiasm. Thus, in a recent journal, a surgeon reports a case of a woman of fifty who was in the terminal stage of arthritis, in constant pain, unable to turn over in bed, and unable to use her hand sufficiently to write or to feed herself. The statement is made that within twenty-four hours after operation upon the colon she was able to turn over in bed, and in three days the pain was gone. Does not such an improvement indicate two things: First, that the actual changes in the articulating surfaces of the joints and in the synovial membranes must have been much more grave than they were thought to be? Does it not bring to mind the possibility that there was a marked hysterical element in this case? Or, again, does it not raise the question as to whether so rapid an

improvement did not follow the entrance of a foreign protein and not depend upon stopping the absorption of toxic material or pathogenic microörganisms from the intestine? Surely an arthritis which had its origin in what might be called a septic colitis could scarcely be cured by the mere removal of the cause in such a short space of time.

Last, but not least, it would seem that having debated this question carefully in his mind and having decided that operative interference is indicated in a given case, it is the duty of the physician not only to be frank with the patient as to possible dangers, failures, and successes, but to see to it that the patient passes into the hands of a surgeon who, on the one hand, has had so large an experience in intestinal surgery as to make him *facile princeps,* and yet, on the other hand, is known to be one so well balanced in his judgment as not to have performed a multitude of such operations because he is a "faddist" and because, being carried away by a "fad," he has been unable to properly interpret the results which have been obtained.

SO-CALLED TWILIGHT SLEEP IN OBSTETRICS.

There is probably no theme of greater interest to women and medical men than this one. Because many well-qualified obstetricians have expressed their doubts as to the wisdom of resorting to the hypodermic injection of scopolamine and morphine to relieve the pain of labor, there has been a tendency on the part of some of the members of the laity to take the attitude that obstetricians are callous, and that, as long as the labor terminates advantageously, the question of pain is a negligible factor. Such evidences of misjudgment are not uncommon where the emotions and affections are potent factors in determining opinion. As a matter of fact it is the duty of the physician to see that nothing is done to, or administered to, a parturient woman which will in any way jeopardize her safety or her life or that of her offspring, and while it is true that a very considerable number of papers have appeared, chiefly in European literature, in which so-called twilight sleep is cordially recommended, it is also true that in this country and in England those members of the profession who have employed it are by no means convinced as to its efficiency or safety.

As pointed out by Hirst in the discussion of a paper upon this subject presented to the Pennsylvania State Medical Society, even the most ardent advocates of twilight sleep admit that it is only in the first stage of labor that this method is of marked value, and, therefore, chloroform and ether must remain the anesthetics commonly employed in the second stage. It is quite true that many obstetricians, working in hospitals, have found nitrous oxide gas and oxygen to be efficient, but the weight and bulk of the gas-oxygen apparatus, the necessity of its being employed by an expert, its expensiveness, and, Hirst thinks, its tendency to produce still-born or apneic babies, militates against its general employment. Hirst believes that if enough morphine and scopolamine is used to produce indifference to pain there is prolongation of labor, a tendency to atony of the uterus with hemorrhage, increased necessity for instrumental delivery, and an increased number of babies which cannot be revived. He believes that the majority of American obstetricians are in accord with him. If such small doses are given as to be perfectly safe to mother and child the drugs, in many cases, are inadequate. Hirst recognizes, however, that there is a certain amount of demand on the part of some women for this medical treatment, particularly in nervous or neurotic, apprehensive persons in whom the hypodermic injections produce a useful psychic influence, but he believes that when the injections are given the additional precautions of darkening the room, bandaging the eyes, stuffing the ears with cotton, and banishing from the room every one but the trained nurse and doctor, are often of more use than the drugs themselves. He also states that he has been using cannabis indica with fairly satisfac-

tory results, in the sense that it produces a feeling of indifference to pain and a tendency to hilarity. He found that one-half-grain doses of the extract were not sufficient and often gave as much as 4 grains.

In the paper by Freeland which has been published in the *Pennsylvania Medical Journal* for July, 1916, this writer states that his reports are based upon seven years' experience with the method. Concerning its influence upon the child, he expresses the belief that apnea is no more frequent after this method has been employed than with any other anesthetic. So far as the labor is concerned Freeland thinks that it does not materially lengthen it, but he states that the average duration of labor in 236 primiparæ was 22 1/6 hours, which would seem to be a fairly long or prolonged period. In that type of case in which scopolamine produces delirium and uncontrollable restlessness it does delay labor and even necessitates the application of forceps.

After all, one of the most important factors to be considered in determining this matter is how far this method actually relieves pain. Freeland thinks that it produces complete relief of pain in fifteen and a half per cent, great relief in fifty-seven and a half per cent, marked relief in seventeen per cent, no effect in ten per cent, and out of 236 cases delirium occurred five times.

Finally, Freeland's conclusions are that scopolamine is a useful sedative, not anesthetic, when not pushed to the extreme of physiologic tolerance, that under these conditions it is without danger to the child, that it has not a retarding influence upon the progress of labor, and, possibly most important, that injurious mental results can and do commonly occur, and care should be taken to avoid its use in patients whose make-up suggests such possibilities. In other words, we presume that he means by these words neurotic individuals who have not a very stable mentality.

In the February issue we will publish several articles dealing, more or less directly, with this important subject. In connection with the quotations already made these contributions will provide our readers with a full understanding of this highly interesting matter.

MEDICAL PREPAREDNESS.

In a broad sense every earnest medical student and every studiously observant medical practitioner is preparing for the war which most people think both inevitable and imminent—that is, he is preparing for his particular part in the war; nor in the case of the surgeon at or past middle life is further preparation needful or desirable, since such ones should be used either as consultants or directors in their purely professional capacity, or should be given the care of patients discharged from base hospitals to the interior.

On the younger professional men will fall a more varied responsibility: (1) The duty of examining recruits—that is, of selecting men physically fit to stand a rigorous course of military training and to profit by it. (2) The early recognition of those who soon show that they are physically or mentally unfit. (3) The protection of the soldiers against disease; this implies a broad knowledge and a rigorous application of the rules of military sanitation. (4) The immediate care of those crippled in the service, their prompt and safe conveyance to dressing stations or hospitals; this includes the whole broad question of transportation. (5) A working knowledge of the record system obtaining in the army. (6) A practical knowledge of food; its initial value, standards of excellence, and best methods of preparation.

It is obvious that a medical education, even a broad one supplemented by specialization in surgery, reënforced by a large patriotism and the wish to help, are not enough to fulfil the requirements, even as sketchily outlined above. The work is distinctly technical in many of its phases and requires a specific, direct, and practical preparation; in part provided for by the United States in its camps at Plattsburg and Tobyhanna, in part by its correspond-

ence school, in part by experience gained in service with the National Guard.

It is obvious that complete efficiency can be attained by the thousands of the younger medical officers who will be called out to active service only by actual experience, and it is equally obvious that this efficiency will come earlier and be more complete in direct proportion to the painstaking efforts to prepare in so far as this is possible in times of peace, nor does this preparation consist in the purchase of a uniform and the receiving of a commission in the Reserve Corps. Every man who believes he is still young enough to play an active part in the coming war should attest the sincerity of his conviction by availing himself to the full of the opportunities offered by the Army Medical Corps.

Aside from personal preparedness there is preparedness concerning material needed. Thus, at the suggestion of the National Red Cross, numbers of base hospitals have been organized. These are usually in connection with teaching institutions and with the thought in mind that thus might be assembled a staff of more than average experience and so used to each other's ways that team work might be expected from the beginning. Such a base hospital was mobilized in Fairmount Park on the last day of the meeting of the American College of Surgeons in Philadelphia. The army furnished the tentage, which was put up with extraordinary speed by Major Harold Jones with a small corps quite untrained as a working team. The equipment was sent over from New York from the Presbyterian Hospital, their unit under Dr. George Brewer having purchased the $25,000 worth of material needful for the supply of the base hospital. The personnel was brought on by Dr. George Crile, of Cleveland, as representing the Lakeside unit. This hospital was prepared to receive patients and could have adequately cared for them. In itself it was of little service beyond a practical demonstration of the earnest purpose of those advocating preparedness, and unless it is followed by something very much better and more complete—for instance, such a base hospital as was exhibited in model by Brewer—it will have fulfilled no largely useful purpose other than that incident to the demonstration of the difficulties and delays attendant upon any mobilization.

Dr. F. F. Simpson is now engaged in a careful inventory of the medical resources in the United States, including both hospitals and medical and surgical supplies. Dr. Bloodgood and his committee are concerned in solving the question of the most efficient first-aid package. Dr. Estes and his committee are endeavoring to standardize the treatment of fractures.

The thousands of surgeons of both the Central Powers and the Allies have as yet failed to give us the answer as to the best treatment of lacerated, contused, and infected wounds aside from free drainage.

It will be well for each medical man to set clearly before himself the thing for which he wishes to be prepared. For the home service the educated man is ready; for field service he requires a complete and extensive education. If he anticipates field service the more quickly he gets the rudiments of this education in time of peace, the more surely will he attain efficiency and honors when the need comes.

DIAGNOSIS OF URINARY CALCULI.

In former years the diagnosis of renal, ureteral, and vesical calculus was regarded as extremely easy. A renal or ureteral calculus of surgical moment was supposed to occasion pain paroxysms of prostrating severity which radiated along the course of the ureter and often into the genitals. It was accompanied at first by a difficulty in emptying the bladder, and later at times by slight frequency and urgency, or there might be no bladder symptoms. As an occasional symptom hematuria was recognized, rarely severe, often recurrent, mostly indicated by the presence of occult blood. Vesical calculi were supposed to be accompanied always by painful and frequent urination, with stoppage of the flow toward its end, and with pain, worse at the termination of

the act of micturition and referred to the end of the penis. Moreover the presence of calculus and the absence of pus in the urine were regarded as extremely unusual.

It has been shown that calculus may remain in any part of the urinary tract for years without causing symptoms, or at least symptoms which would strongly suggest the presence of stone; that these symptoms when they do develop may exceptionally be referred to the gastrointestinal tract; that in the main, in the case of renal stones, they are expressed in the form of a dull ache in the costovertebral region, radiating if at all downward; very exceptionally in the form of pain in the abdomen. This dull ache is often, but not always, accompanied by renal tenderness, best detected by manual palpation in the costovertebral angle. It is often but not always associated with hematuria either obvious or occult, commonly made worse by jarring and active exercise, as is the dull kidney ache. Even though the stone be lodged in the ureter or bladder it may yield practically no characteristic symptoms.

The question of diagnosis is then not only an important but at times an extremely difficult one. Fortunately it should be settled by careful *x*-ray pictures, which, expensive though they may be, are absolutely needful in recognizing underlying conditions in so many obscure cases. The *x*-ray has been depended upon somewhat blindly as an infallible finder of stone. Cabot was one of the early ones to point out its fallibility, and indeed some competent observers go so far as to claim that it fails in 25 per cent of cases.

The renal tests are of distinct value, particularly the test of the separate kidneys as conducted by catheterizing of the supposedly sound kidney by an instrument so large as to occlude the ureter at or beyond the point of catheterization, and drawing from the bladder the urine which passes in a given time down to it from the supposed crippled side. A given series will show delayed elimination and often one which is profoundly influenced. This must be regarded as a suggestive sign.

In so far as renal stones are concerned, however, it must be acknowledged that the condition may exist without giving one single characteristic sign or symptom, and that the symptoms may be all referred to the abdomen. This circumstance must be carefully considered in deciding the true basis for certain obscure abdominal complaints.

It would seem incredible that a stone should remain in the bladder without giving symptoms. Yet there are repeated instances of stones of very large size evidently existent for years, lying bathed in a sterile urine and causing no symptoms whatever, not even frequent urination, and detected accidentally in the course of examination for other conditions. This, however, is much rarer than in the case of the kidney. Nor in such symptomless cases is there the same need for accuracy of diagnosis and prompt therapeusis as there may be with kidney stones with referred symptoms.

REPORTS ON THERAPEUTIC PROGRESS.

TREATMENT OF ARTERIOSCLEROSIS.

Northwest Medicine for September, 1916, contains an article by JANES in which he admits that vasodilators are of value in reducing high pressure. To be sure, it is symptomatic treatment, but why not? A vicious circle may be broken by improvement of a symptom. The nitrites may be used for relief of high pressure, not, however, if the heart shows signs of yielding. If used, it should be in increasing doses and with watchfulness. An occasional course of calomel, or blue mass, is usually indicated. Iodides in other than syphilitic cases are used empirically and with good effect, their favorable action probably being due to a decrease in the viscosity of the blood. This latter is also effected by the use of mineral waters, baths, and purgatives.

Venesection is a remedy very useful in two ways: first, as a part of the treatment in cases of hyperpiesis in robust, plethoric individuals, even in the absence of an emergency; second, as a relief in a crisis. Janes has used it in both classes to his satisfaction generally. When used to relieve the ordinary symptoms of high pressure in properly selected cases, it is resorted to about twice a year. Following the withdrawal of a pint to a pint and one-half of blood, the patient experiences considerable relief. The blood-pressure drops and may remain at a lower level for several months. It is gratifying to have a patient return in, say, six months for another venesection with the voluntary statement that she has been so much better but feels that it is time to repeat it. Patients who have experienced this relief look forward to the treatment with confidence. In crisis like threatened cerebral hemorrhage the results of bloodletting are very encouraging. In choosing cases for venesection we should have clearly before us the classification of arteriosclerosis, for, while it is a measure of considerable value in the hyperpietic form, it is scarcely applicable to the decrescent cases. In fact, the results in the latter class might be disastrous, as also in cases anemic from chronic nephritis.

In toxic arteriosclerosis the blood-pressure is not raised, so depressor remedies are not needed. The treatment is that of the particular poison or infection concerned. Syphilis is the most common infection, and a discussion of its treatment could not be undertaken in a paper of this scope. With the present improved remedies at hand and the improved laboratory methods of accuracy in diagnosis, cases of syphilis will generally be cured before sclerosed or atheromatous blood-vessels require treatment. For the toxic forms rest, massage, baths, diuretics, and cathartics will be the remedies used.

Janes has tried to show that much can be accomplished in the treatment of arteriosclerosis due to hyperpiesis by treating the high blood-pressure to which it owes its origin. Unfortunately, in decrescent arteriosclerosis we cannot anticipate any such fortunate results of treatment. It is to this form we refer when we say "a man is as old as his arteries," and as we cannot subtract years from his age, we cannot extract calcareous deposits from his arteries. We may watch and wait, lending a hand here and there, but the result is inevitable. We dare not interfere with a moderate rise of blood-pressure, for it is compensatory. The arteries are less resilient and there is more friction, consequently the heart's action increases in force to overcome the odds.

Just a word in regard to indications for treatment, furnished by blood-pressure readings. Diastolic as well as systolic blood-pressure should be taken and the pulse-pressure estimated. The probabilities of loss of cardiac compensation in cases of high blood-pressure increase directly with the increase in pulse-pressure. Consequently, a high pulse-pressure is a contra-indication for the use of depressant measures. On the other hand, it is a positive

indication for guarding the heart muscle and the use of a drug of the digitalis group. In high blood-pressure cases, if the pulse-pressure be low—that is, if the diastolic pressure be comparatively high—cerebral hemorrhage is to be feared and sudden muscular effort might be fatal. Depressants or venesection in such cases may be indicated, although all measures for immediately lowering blood-pressure should be used very guardedly. It is a grave error to assume that very high blood-pressure (systolic) should be promptly reduced. It is frequently compensatory, and disastrous results may follow this reduction.

PROGNOSIS AND PROPHYLAXIS IN ECLAMPSIA.

In *The Practitioner* for September, 1916, STRACHAN expresses his belief that eclampsia is preventable. Edgar and some others dogmatize that it is absolutely so, but from his knowledge of the pathology of the condition he cannot, personally, go so far in his views. Undoubtedly, however, the great majority of cases could be prevented, and of no disease can it be more fittingly said that prevention is better than cure. Again, the prognosis and prophylaxis in this disease are very closely related, and few things influence the outlook so much as the amount and quality of efficient prophylaxis. The maternal mortality is usually reckoned as about 25 per cent, and, obviously, to prevent the appearance of so dangerous a condition is much more satisfactory than to step in to the established condition, with even the most efficient treatment.

The first point about prophylaxis is, clearly, that in the great majority of cases it must be carried out by the general practitioner. If the condition develops fully, the consulting obstetrician may be called in, or the patient sent to a hospital; but for the months before parturition it is the general practitioner who is to be on guard to see, as early as possible, the first premonitory signs of the condition, to treat with energy the early toxic manifestations, and finally, if the condition develops fully, to institute curative treatment. It is, then, especially to general practitioners that these remarks are addressed.

The possibility of eclampsia developing in any particular case should be borne in mind by the practitioner, when he is engaged to attend any woman, especially a primipara. He should then appoint an early date, when he can fully examine his patient in bed. The general condition, the state of the tongue and teeth, the condition of the bowels, the presence or absence of edema, the duration of pregnancy, and the condition of the circulatory system, should all be investigated, and a specimen of urine examined. Presence or absence of albumin, and the relative amounts of urea and ammonium carbonate must be estimated. Of these, the ammonia-urea coefficient is certainly the most important point to which to pay attention, but it is only fair to assume that most practitioners have not the apparatus for such an estimation. Many cannot afford the necessary time, although when one has performed the formalin test a few times it does not take long to do, while the necessary apparatus is simple. But in most cases, in practice, the presence or absence of albumin will be the point mainly attended to. The specimen of urine need not, at first, be obtained by catheter; indeed, if always free of albumin, the catheter is not necessary. If, however, albumin appears, a catheter specimen must be obtained to determine whether the albumin comes from the kidneys or is due to fouling by vaginal discharge.

If all is found well, the patient should be advised about her general mode of life. She should eat light and easily digested food, varied according to taste, and insure a thorough but quiet evacuation of the bowel; drastic purges are to be avoided. In this respect, aloin, cascara, and calomel are the best drugs to use. One drachm of liquid extract of cascara at night may be given at first, and the dose increased or decreased, until it is found, by experience, how much in each individual case is sufficient, and no more, to insure a daily

action. A most satisfactory drug is the cascara evacuant (P. D. & Co.), which may be administered in the same way. Calomel, gr. 1, repeated hourly for three doses, with salol, gr. 5, also serves very well.

She should be out-of-doors for some time each day, and should take suitable exercise; a quiet walk or a drive in a rubber tired vehicle do very well, but such things as horse-riding or fast motor driving are strictly to be avoided. Sleep must be plentiful, and fully eight hours nightly should be secured, as well as, if required, a nap in the afternoon.

THE MEDICAL TREATMENT OF PEPTIC ULCER.

The *Virginia Medical Semi-Monthly* of September 8, 1916, contains an article by FERGUSON in which he claims that pyloric spasm is a factor in the treatment of gastric and duodenal ulcer, and often it is a distressing condition by virtue of the instantaneous vomiting induced by the spasm. In this condition the vagus nerve is a factor, and a new word has been coined to deal with it—vagatonia. Whether the spasm is produced by a vagus reflex, or by excessive activity of the vagus nerve and its activators, or by something else with which the vagus has to do, he does not know, but for immediate relief from the spasm and its consequences we have an effective remedy in a hypodermic of morphine.

Possibly the most universally employed drug in the treatment of peptic ulcer with the idea of its cure is subnitrate of bismuth in doses of about half a drachm several times a day, best given in barley water. It may be given alone or combined with bicarbonate of sodium or carbonate of magnesia; this is grateful both for the pain and burning, as well as counteracting the hyperacidity. If constipation is a factor, small doses of sulphate of magnesia or enemas are usually sufficient. In some instances the administration of pure olive oil is a very grateful remedy to the patient, about two ounces after meals. Olive oil could produce no physiological effect in any given pathological condition, but it softens the sharpness of the acid contents of the stomach, and, besides, for a time makes in a mechanical sense a coating and a protection for the ulcer, which adds not only immediately and immeasurably to the patient's comfort, but by virtue of these things is helpful to nature in its tendency to a cure.

We are sometimes more fortunate than we are wise, and upon this principle Ferguson has come upon a remedy for peptic ulcer, which is mineral oil. What he has to say relative to this is based only upon the authority of his own limited experience. He is sure, however, that in this agent we have a most valuable acquisition to our list of remedies. Mineral oil would be indicated under any condition suggesting olive oil. It contains nothing that the body can assimilate; it is neither a drug, a poison, nor a food—nothing but a lubricant. It simply lubricates a defective drainage system until it becomes effective. It excites no muscle and stimulates no nerve.

THE TREATMENT OF LUES OF THE BRAIN AND CORD BY SUBDURAL INJECTION OF SALVARSANIZED SERUM.

In the *Clifton Medical Bulletin* for September, 1916, NICHOLSON asserts that the routine use of lumbar puncture and the Wassermann reaction in every possibly doubtful case, even in the entire absence of physical signs, must be urged. In his clinic, positive findings are infrequent in patients ordinarily classified as psychoneurotics.

It is absolutely essential that patients be kept under observation for a long time and that treatment be persistently followed.

The use of mercurialized serum has in Nicholson's hands given more pronounced serological and clinical results than has salvarsanized serum. The symptoms which have been entirely relieved by treatment have been general malaise, pain, painful muscular spasm, decreased sphincter control, both of bladder and bowel. Ataxia has been very much relieved in favorable

cases. Serologically, all cases have shown marked improvement, and in two the spinal fluid has become entirely negative, even to cholesterinized antigen.

THE MECHANISM OF SALINE DRESSINGS.

TAYLOR in the *British Medical Journal* of September 2, 1916, states that the clinical superiority of the treatment by hypertonic saline dressings does not appear to be so decisive that the theoretical and experimental objections to their use can be disregarded.

The theoretical indications for the use of salt solutions appear to be based on an untenable hypothesis of the structure of the tissues about the wound, and an erroneous interpretation of physical and physiological laws.

Certain characters possessed by hypertonic NaCl solution are theoretically undesirable in a dressing solution, and their harmful action can be demonstrated experimentally and clinically.

Certain desirable results claimed to be effected by the use of hypertonic NaCl dressings cannot be demonstrated *in vitro*.

The chief beneficial character held by strong salt solutions, aside from the cleansing property possessed by all watery solutions, is their mild antiseptic action.

A detailed investigation of the specific character of special antiseptics may be a more profitable undertaking than an exclusive concentration upon the physical and physiological properties of sodium chloride.

THE LOCAL TREATMENT OF BURNS.

In the *British Medical Journal* of September 2, 1916, WILLAN states that the treatment employed in his wards has been as follows:

1. The blisters were punctured and the contents drained under strict antiseptic precautions, the surface being first sponged with carbolic acid solution, 1 in 20.

2. If it was a recent burn he applied the service picric acid dressing as the first dressing.

3. He smelled the dressings at his morning and evening duty rounds. Early sepsis in burns has an unmistakable odor, and the sense of smell can detect it early.

4. If there was no smell the first dressing was left on for two days, when it was removed in order to puncture any further blisters which might have formed. An ointment was applied, made of equal parts of boric ointment and vaselin. This was plentifully spread on strips of white "surgeon's lint," which does not tend to adhere, and so is not a painful procedure.

5. If the dressing had the septic smell the infected part was fomented with boric fomentations every four hours. The fomentation was four-ply, and the covering jaconet projected for half an inch beyond the margins of the focus in order to keep in the moisture. When the area cleared up—that is, when all sloughs, etc., had separated and a clean surface was left—the above mentioned ointment was similarly applied once a day, according to the amount of pus which had been secreted from the raw surface.

6. If the burn was aseptic the loose skin of the blisters was not removed, but was left to act as a protection to the exposed deeper and painful layer of the skin.

7. If the burn was septic all loose skin was cut away; under these conditions the skin harbors harmful toxins which are readily absorbed to the detriment of the patient.

8. The dressing next to the skin was covered by alembroth wool, which contains a small amount of antiseptic (mercury perchloride), sufficient to prevent multiplication of any organism the wound discharges. The whole dressing was fixed by a bandage loosely applied.

9. Face masks were not used except when a fomentation was required. With face burns the nose, cheeks, and lips were frequently smeared with the ointment, which was gently massaged in with the convex surface of a teaspoon.

As prevention is much easier than cure, the greatest possible care was taken to prevent any infection of the burn wound, and the precautions particularly applied to a wound which was already septic. The vitality of such a patient is low, and his vitality is still further reduced by the continued absorption of the toxins formed by the septic bacteria. The exposed deep layers of the skin absorb toxins with avidity; until the septic sloughs have separated, and the infected area is quite clean, this absorption continues to occur, thereby seriously exhausting the patient's strength. If sepsis is present every effort is made to eliminate it as quickly as possible. If the patient can be kept going until this has occurred, he will most probably ultimately recover. If a further infection is added by any act of surgical uncleanliness on the part of the surgeon, nursing sister, or sick-berth steward, this in a large number of cases proves to be the last straw. The patient may succumb before the separation of the slough from the living tissue (that is, the elimination of the sepsis) can be effected. Therefore to neglect antiseptic precautions in the treatment of a burn is akin to soundly kicking a man who is down on his luck.

To prevent infection sterile india-rubber operation gloves were used for dressing the burns, and were changed for each case. Further, a bowl of 1-in-20 solution of carbolic acid was kept on the dressing bogey, and the gloved hands were constantly sluiced in this. No burn was ever exposed until the area had been isolated by towels wrung out in carbolic acid, 1-in-20 solution; these lay on a sheet of jaconet the same size as a towel. After finishing a dressing, the towels were folded up and used for the next case. The same towels sufficed for a large number of dressings. All blisters were opened and drained under such antiseptic precautions. The person who applied a fomentation had first thoroughly washed his hands before doing this.

If Willan was suddenly inundated with a large number of burn cases he would provide, if possible, all persons who were to dress the wounds with smooth india-rubber gloves. Should circumstances prevent changing of the gloves between cases, the gloved hands would be constantly rinsed in carbolic acid, 1-in-20 solution. For practical purposes any organisms would be thus removed from the smooth-surfaced glove.

This small series well illustrates the fact that burns up to the third degree will heal immediately, provided they are protected from the air by a mild antiseptic dressing. This can take the form of (*a*) lint soaked in picric acid, (*b*) dry boracic lint with boracic powder, or (*c*) ointment either smeared on directly or spread on lint.

As a first covering for a recent burn the service picric acid dressing is excellent, and can be quickly applied. When this dressing is removed in an aseptic case the skin presents a dry, yellow, crinkled surface, all loose skin being curled up.

Having once removed the picric acid dressing Willan never repeats it. His reasons are: (*a*) That a burn after the first forty-eight hours is more comfortable with an ointment dressing, and that the wound heals quicker; (*b*) the burnt area should be examined in order to empty any further blisters which have formed. To neglect the latter may mean that the coagulated serum becomes organized by vessels from the deeper layers of the skin, a most undesirable thing to happen.

The reason for using an ointment of equal parts boric ointment and vaselin is that it gives a mild antiseptic ointment of excellent consistence for the purpose. Boric ointment by itself is too firm and lies on the skin in the form of uncomfortable hard flakes. Vaselin by itself melts too freely at the body temperature and becomes disseminated in the lint upon which it is spread.

Any dressing which adheres to the raw area is not a good one, as it is uncomfortable for the patient, and there is bleeding on its removal. A boracic fomentation is comfortable and is an excellent method of quickly cleaning up a septic burn. The fomentations should be removed every four hours.

Willan did not use face masks excepting

when fomentations to the face were required. He finds a patient dislikes a mask intensely, and covering up his face has a depressing effect on him. More important still, with a face mask on it is impossible to treat efficiently the purulent conjunctivitis which was so frequent an occurrence in burns of the face; the eyes required irrigating at least every two hours.

The great value of the protection afforded by clothing was illustrated by the fact that in 22 out of 28 cases the head (including its junction with the neck and also the face), wrists, and hands were burnt. A mask should protect the face, while gloves should protect the hands. The gloves should have gauntlets, as two or three of his patients burnt on the arms were wearing coats at the time, and the flames had traveled up the sleeves.

The bandaging of the patient's limbs is a most important point. In the excitement of the battle it is easily forgotten that there is a great deal of edema and swelling after burns. A bandage, even loosely applied, will soon become uncomfortably tight. This causes intense agony, and if left on too long will result in gangrene of the limb. Immediately the cases arrived in Willan's wards he had all the bandages of the burn cases cut and left loose as they were until he was able to dress them. This gave great ease.

SOME FACTORS OF THE CARDIAC MECHANISM ILLUSTRATED BY CERTAIN ACTIONS OF BARIUM AND DIGITALIS.

In the *Quarterly Journal of Medicine* for July, 1916, BURRIDGE reaches, as the result of an investigation, these conclusions:

1. The heart reacts in two chief ways to drugs, etc. In the one case the reaction comes on apparently immediately after the drug reaches the heart, and passes off equally quickly on removal of the drug from the perfusing solution. In the other the change usually shows a distinct time factor in its development and especially in its subsidence. This second type of change persists for some time after removal from the perfusing solution of the drug originally giving rise to it, and is to be regarded as a "state" of the heart.

2. The cardiac mechanism is made up of two factors: the actual working parts and the accessories. A suggestion is given as to the nature of the working parts and their mode of interaction. It is also suggested that evolution has determined an optimum power of interaction with each other of the parts normally present.

3. Digitalis acts as an accessory to the normal mechanism. It enables one element of the mechanism, calcium, to perform more work in certain directions than would otherwise be the case. The therapeutic effect of the drug is dependent upon its induction in the heart of a "state" in which that organ becomes more responsive to certain actions of calcium. The change induced by digitalis is a self-limited one. It persists immediately after the removal of the drug from the perfusing solution and then slowly subsides.

4. Barium acts as an imperfect substitute for an element of the normal machinery. When barium and calcium are present in mixtures the two elements attack common structures and produce their effects in accordance with the law of mass action (Ringer). Arguing from the results obtained with digitalis, cardiac insufficiency is due to alterations in the normal relations subsisting between the heart and the calcium of its perfusing solution (Burridge). The use of barium is thus contraindicated in such conditions, for in employing it we should be using a substitute, imperfect even under normal conditions, to carry on the functions of an element at a time when that element is unable to do its own work properly. Moreover, whatever action barium produces is obtained at the expense of calcium already present.

5. The systolic condition induced by barium comes and goes respectively with addition to, or removal from, the solution of the element. This barium contraction may be produced many times—thirty was an actual number—in the same heart. In marked contrast with this the systolic con-

dition induced by digitalis takes some time to come on, and a considerable time to pass off on removal of the digitalis from the perfusing solution.

6. Barium induces a "state" of the heart in which that organ has a decreased responsiveness to calcium. The "state" of the heart induced by barium is thus the opposite to that induced by digitalis, and it is shown that digitalis can act as an antidote to this damaging action of barium.

7. An antagonism exists between calcium and digitalis in regard to the "states" they induce in the heart.

8. It is shown that the temperament of the heart or its flexibility of reaction to a given dose of drug tends to change with the calcium content of the perfusing solution. Some general deductions are drawn from these experimental facts.

9. Some evidence is given that an inadequate supply of phosphates may determine a condition of cardiac insufficiency.

THE HOSPITAL TREATMENT OF SIMPLE CHOREA.

BAILEY in the *New York Medical Journal* of September 23, 1916, expresses the belief that the treatment consists principally of rest and isolation. This means rest in bed, with curtains drawn, and no communication allowed with other patients in the ward and no visitors. In certain cases cold packs are given, and in the presence of rheumatic history, and even without it, rheumatic remedies, especially aspirin, are prescribed. In a few violent cases he has used lumbar puncture, which, when the cerebrospinal fluid is under increased pressure, seems to diminish the movements very promptly. In view, however, of the long time the disease has existed before it comes to us and the violence of the motor restlessness, it seems probable that several weeks' complete rest is necessary to overcome the irritability of the nervous system which must have been engendered, so that even if after a lumbar puncture all the symptoms disappear, it seems wiser to insist whenever possible on a three or four weeks' treatment for the purpose of reestablishing the tone of the nervous system. Bailey has rarely found it necessary to give salvarsan.

Most of the patients who stay less than ten days leave for some reason other than that directly connected with the disease. In a few patients in whom choreic manifestations disappear within two or three days, the parents have taken the children home. Bailey does not feel, however, that ten days is sufficient time for the treatment of even mild chorea. The period between ten and thirty days is the one into which most of the cases fall. At the end of this period in the majority of cases no twitchings have been noticeable for some time, and the patient, so far he can see, is well, except for cardiac murmurs or lesions which may still persist. A few patients who have stayed longer than thirty days have either been cases of very long standing, or else are those in whom the chorea seemed merely another manifestation of a deeply embedded long-standing rheumatic tendency. Sleep after the first few days is generally very good, although some restlessness and talking may persist for a long period.

Bailey has been unable to draw inferences from the condition of nutrition. Some patients who do not do particularly well gain in weight; others in whom the twitching disappears rapidly lose weight; but in the majority there is no material change in weight during the stay in the hospital.

Relapses occur, but they are comparatively infrequent after hospital treatment. Only three patients have been treated in the hospital on repeated admissions. Bailey is further inclined to believe that relapses are rare, from the fact that only thirteen of the forty-eight patients discharged from the hospital have reported subsequently to the dispensary. Those who have thus reported, with two or three exceptions, have not been more than once or twice, and then only for some simple remedy. One patient came back after many months' interval to be treated, not for chorea, but for another

manifestation of rheumatic tendency, viz., erythema multiforme. Another came back, after several years of intermittent choreic symptoms, for treatment of a heart lesion; in this patient all twitchings had disappeared.

Bailey considers this result quite encouraging because so many patients have come to him with histories of previous attacks; several patients have had three or four.

His general conclusions from cases of chorea treated in the hospital are that by rest and seclusion, when the treatment is extended over a reasonable period, chorea can be permanently cured without much danger of a relapse, and in view of the general relapsing tendency of the disease, he feels that the treatment of chorea is one of the most important functions of a neurological hospital.

TREATMENT OF SEPTICEMIA.

In the *Interstate Medical Journal* for September, 1916, BERGHAUSEN points out that he cannot, in a short paper, discuss every detail of the treatment. It would be impossible to mention the names of the many remedies which have been proposed and employed. He therefore confines himself to a discussion of the more important factors in the management and treatment of septicemia.

A capable nurse, preferably two, should be in attendance, some one particularly skilful in managing near relatives and inquisitive friends. Careful instructions, as to her duties, should be given each day. She should be instructed to cleanse the mouth carefully. It is well to allow the patient to eat ordinary peppermint or wintergreen candy, although some of these patients do not care for it particularly. It serves to keep the mouth moist and fresh; it has some food value and may possess some antiseptic properties.

The patient should be treated as a consumptive whenever possible. Allow him to live in the open air; at least give him plenty of fresh air. These patients are placed in a crowded ward too often, or in a room with closed windows. This is wrong, since fresh air supplies not only the needed oxygen, but also serves to lessen the symptoms of the nervous system; it induces sleep.

Septicemia is marked by an increased metabolism in all tissues of the body. We should attempt to meet this waste by feeding the proper number of calories. Very often, as in patients suffering from typhoid fever, the appetite is poor and no food is relished. We must encourage the patient and make the dishes as appetizing as possible. The nurse should be a good dietitian. If necessary, food may be given oftener and in smaller quantities. Add plenty of whisky to the favorite drink—our old friend, the egg-nog. Some newer forms of bottled liquid foods, as peptonoids and so forth, may be relished. Although we must feed the patient generously, it is just as important to prevent overfeeding and the consequent derangement of the digestion.

Besides the daily cleansing bath, an alcohol sponge for high temperature should be given. The ice bath is not needed; the so-called "fan bath" will do just as well for hyperpyrexia. The hot pack is indicated in septicemia marked by high temperature and erythema, and in the absence of the more serious complications; necessarily whisky, caffeine, or camphor should be given immediately before or after the pack. Allow the patients to remain in the pack ten or fifteen minutes; they usually perspire freely and thereby throw off the waste products.

When acute endocarditis has developed, an ice-bag may be employed over the heart. A cloth should be next to the skin and the weight of the bag lifted from the chest, if possible. As long as the ice-bag causes the pulse to become slower and more regular, it serves a purpose; otherwise it may just as well be discarded.

The application of direct heat serves a very useful purpose. The patients usually tolerate dry heat better than they do the moist. The electric pad, and an apparatus constructed with electric globes as the

source of the heat, can be conveniently applied to any part. They should be employed by all means to the lower abdomen in pelvic inflammation complicating pregnancy. Hot douches are well tolerated, and have great therapeutic value.

Many physicians advise against the use of preparations of the digitalis series when acute endocarditis has developed. Berghausen has found this complication no counter-indication to the careful use of the digitalis preparations. We may employ such preparations in the beginning to enforce the heart's action; we cannot thereby prevent the onset of acute endocarditis.

Caffeine preparations increase the heart's action and therefore the urinary output; possibly they prevent a heart paralysis.

Of the antipyretics, quinine is the most important. It should be used in small doses and often, since smaller doses increase, and larger doses paralyze, the leucocytic activity. Coal-tar derivatives should be cautiously used; aspirin is the safest.

Various preparations of silver have been employed and have been found useless, on the whole. Unguent Credé has little more than a suggestive effect in Berghausen's experience. Collargol preparations have been used intravenously, but with little effect except in cases of septicemia due to the staphylococcus. Other antiseptic preparations have been used intravenously, apparently with the drawback that their dilution must be too great to secure safety in administration.

We all know that it is essential to have these patients drink plenty of water to secure active elimination through the kidneys and to make up for the increased loss of water through perspiration. Apparently good results have been obtained by hypodermoclysis by allowing large amounts of normal salt water to remain in the bowel after a cleansing enema, or by the drop method per rectum.

Antistreptococcic serum has little antitoxic and bactericidal value; it acts by so changing the bacteria that phagocytosis takes place more readily. Before deciding upon its use, we should be reasonably sure that the streptococcus is the underlying cause of the infection. If no improvement follows the use of 50 or 100 Cc., discontinue its use or employ a serum obtained from another manufacturer. If the temperature falls to a point near normal following its use, then continue the treatment until every indication is present that the patient has definitely improved. According to the experience of most physicians, antistreptococcic serum has only occasional real value.

Berghausen's experience has been limited to the use of autogenous vaccines. These have been employed as a routine in addition to other therapeutic measures. He has aimed to prevent general reactions. Very often no local reactions will be obtained in severe infections. His experience has justified their continued use.

We must rely upon the judgment of the aural surgeon when to ligate the jugular vein in order to prevent the onset of septicemia following a mastoid operation.

Spinal puncture is indicated when symptoms of meningismus or meningitis develop. In serous meningitis we are enabled to make the proper diagnosis and prognosis by examining the spinal fluid obtained by the puncture.

When improvement has begun during the course of septicemia, we must still carefully examine the patient from time to time, to determine the possibility of a new complication. By proper hygienic and therapeutic measures we must combat an anemia or treat a heart weakened by the long-continued infection. A change of surroundings or climate is usually advisable.

THE RELATIONSHIP BETWEEN PELVIC DISEASE AND MANIC-DEPRESSIVE INSANITY.

The *American Journal of Obstetrics and Diseases of Women and Children* for September, 1916, contains an article by GIBSON in which he endeavors to show the value of operative procedures in certain cases of insanity. He concludes:

1. No mental improvement may be expected to follow an operation performed on

the pelvic organs of a woman who is suffering from a psychosis which is characterized by dementia.

2. An operation for the correction of lesions in the pelvis is justifiable in a woman who has manic-depressive insanity, and some improvement may be hoped for if the operation is performed in the first or second attack.

3. The pelvic pathology is not the cause of the psychosis but may act as the exciting cause of an attack in a woman of neuropathic stock.

4. The effect of the operation may be an indirect one by improving the general physical condition of the patient.

THE TREATMENT OF SYPHILIS OF THE CENTRAL NERVOUS SYSTEM.

In the *Archives of Internal Medicine* of September 15, 1916, WALKER and HALLER, in the course of a carefully prepared report of this condition and its treatment, state that patients with recent syphilitic meningitis and cerebrospinal syphilis may be relieved symptomatically by intravenous salvarsan; the spinal fluid Wassermann reaction may become negative with 1 Cc. and the cell count may become normal. Patients with long-standing cerebrospinal syphilis and tabes may be benefited symptomatically following salvarsan, but little or no change occurs in the spinal fluid findings.

Patients with recent and those with late syphilitic meningitis, cerebrospinal syphilis, tabes, and general paresis of the insane are markedly improved following the combination of intravenous salvarsan and intraspinal salvarsanized serum (Swift-Ellis method), and those who fail to improve under salvarsan alone do not improve either in symptoms or in spinal fluid findings following this double treatment.

That intraspinal salvarsanized serum greatly benefits patients with central nervous system syphilis is shown by the fact that those with negative serum reactions and with positive spinal fluid findings are symptomatically relieved by this treatment. In many patients the spinal fluid Wassermann reaction becomes negative with 1 Cc., the cell count becomes normal, and a negative (Noguchi) globulin test is obtained following sufficient treatment with salvarsanized serum intraspinally without other medication.

SOME THEORETICAL CONSIDERATIONS ON THE PRESENT STATUS OF ROENTGEN THERAPY.

SHOHAN in the *Boston Medical and Surgical Journal* of September 7, 1916, claims that tuberculous lymphadenitis forms a particularly grateful field for the roentgen therapeutist. These cases, judiciously selected, yield to treatment almost invariably. In view of the good results reported by all observers and amply sustained by his own experience in a number of cases, he feels that it is an injustice to disfigure so many faces, when by means of roentgenization they could well be left unmarred. At least, it seems to him that every victim of tuberculous glands has a right to demand from us that we give him a chance by means of roentgen therapy to escape the scarring of the surgeon's scalpel.

PERIPHERAL NEURITIS FOLLOWING EMETINE TREATMENT OF AMEBIC DYSENTERY.

KILGORE in the *Boston Medical and Surgical Journal* of September 14, 1916, makes the following assertions:

1. Peripheral neuritis after emetine is not uncommon.

2. The symptoms most commonly met with in post-emetine neuritis are generally muscular pain and weakness, usually most pronounced in the legs, sometimes going on to paresis. One case is here reported of hyperesthesia of the soles of the feet without other symptoms.

3. The neurotic symptoms often develop after the emetine injections have been stopped, and may grow progressively worse for some time, with no more administration of the drug.

4. The total amount of emetine necessary

to produce neuritis varies greatly. The total amounts received by the cases recorded by Levy and Roundtree and those reported here are as follows:

		Grains.	Grammes.	
(*a*)	Adult	19.5	(1.25)	Severe neuritis.
(*b*)	"	6.	(.39)	Severe neuritis.
(*c*)	"	21.3	(1.40)	Mild neuritis.
(*d*)	"	12.8	(.85)	Moderate neuritis.
(*e*)	"	about 10.	(.65)	Mild neuritis.
(*f*)	"	15.	(.95)	Moderate neuritis.
(*g*)	Age 8	6.	(.39)	Mild neuritis.
(*h*)	" 7	5.5	(.36)	" "
(*i*)	" 5	4.	(.26)	" "
(*j*)	" 4	4.	(.26)	" "

On the other hand, many patients receive larger amounts and have no symptoms. On going over the records at the Shanghai Hospital for eighteen months, it was found that one white patient had received 13 grains (.85 gm.), three Chinese had 11 to 12 grains, and one 21 grains (1.35 gms.), with no symptoms of neuritis recorded.

5. The prognosis is good. The symptoms clear up gradually, usually over several weeks, leaving no traces apparent.

6. Experiments (now in progress) suggest that peripheral neuritis may be produced by emetine in healthy dogs.

A REPORT OF TWELVE CASES OF SPASMOPHILIA, WITH COMMENTS ON ETIOLOGY AND TREATMENT.

WEBSTER in the *Archives of Pediatrics* for September, 1916, states it is not his purpose to discuss particularly the many metabolism experiments that have been conducted in spasmophilic infants. That the balance of inorganic salts is disturbed is probable. That there is frequently acute water retention is certain. Acidosis of some kind and degree, he believes, is present, and the function of the parathyroids may be disturbed. The exciting cause, however, appears to be in the food.

On a diet excessive in carbon some infants show periodic disturbances, such as asthma and digestive crises; other infants give evidence of chronic disturbances of metabolism: for example, rickets and eczema. Commonly, he believes excessive carbon feeding through overenergy transformation produces a chronic acidosis. Under the foregoing conditions he has frequently noticed an ammoniacal, often irritating, urine, also a lowered resistance to pyogenic infections, particularly furunculosis, styes, and pyelitis. Under similar conditions in his experience spasmophilia occurs.

The theory of Francis Hare that excessive carbon feeding gives rise to carbon accumulation, or an energy overplus which results in periodic explosion, is fanciful, but it gives an excellent working basis for the treatment of recurrent vomiting, bronchitis, and asthma in children, as has been expressed by Kerley. The same idea in Webster's judgment is applicable in spasmophilia, and similar treatment is effectual. The seasonal incidence and familiar character of spasmophilia are those of the periodic disturbances of children, and his experience leads him to believe that spasmophilic infants frequently show these recurrent disturbances later as children. It is his opinion, therefore, that spasmophilia occurs in infancy rather than other periodic explosions because the nervous system provides the most susceptible tissue.

In conclusion he would state his opinion that spasmophilia is due to overfeeding, especially of carbohydrate food, more especially in fermentable form, and that dietetic treatment is most effectual.

THE USE OF EMETINE.

REED in the *Boston Medical and Surgical Journal* of September 14, 1916, gives a general survey of our knowledge of emetine. He points out that ipecac enjoys a well-deserved reputation as an expectorant, where by virtue of the milder symptoms of nausea, which it excites, it causes a flow of bronchial secretion, coats over irritated, dry, inflamed membranes, and has a definite beneficial effect. In so far as emetine excites mild nausea, it shares in this action. Wild called attention to this use of emetine in bronchitis and catarrhal affection of the respiratory tract in 1895 (*Phar. Journ.*, i, p. 435, 1895). Evidently the old emetine, with its contamination of cephaelin or ipecamin, would serve better for this pur-

pose than the purified alkaloid. Also, in the light of our increased knowledge of the pharmacology of the ipecac alkaloids, the older galenical preparations would seem to have certain definite advantages over emetine itself for this purpose.

Emetine has been lauded as almost a specific for hemorrhage in certain chronic diseases, especially for hemoptysis in pulmonary tuberculosis. Some have advocated it as a remedy for hemorrhage in typhoid, diabetes, and other conditions. There is no experimental evidence that emetine has the slightest influence on hemorrhage directly, or that under any circumstances it promotes coagulation. The observation of Howell has been quoted, that emetine in animals causes a soft, jelly-like clot, with no fibrous structure, and that the coagulation time is notably prolonged. These definite data are pitted against no small number of purely clinical observations, with no scientific controls, and even with no careful appraisal of concomitant treatment, or of the possibility of the very frequent improvement which occurs spontaneously in hemorrhage in spite of or without any form of treatment.

It is to be remembered that emetine lowers the blood-pressure and weakens the heart. This, together with the depression of the central nervous system which is produced, might well result in an indirect alleviation of hemorrhage, but this is not the claim of those who see in emetine a specific and direct remedy for hemorrhage. Kunkel (quoted in the *Journal of the A. M. A.*, Nov. 13, 1915, p. 1730) recalls an earlier belief that emetine caused anemia of the lungs and therefore tended to relieve hemoptysis and to have a beneficial effect on pulmonary tuberculosis. He traces this belief to the observation that the pulmonary vessels of animals killed by emetine were empty, a condition really attributable to splanchnic dilatation and drainage of the blood from the lungs. This explanation of the effect of emetine on hemoptysis thus calls in the lowered blood-pressure of emetine, but goes on to claim pulmonary anemia as beneficial, when the opposite is now recognized, as, for instance, the rare association of pulmonary tuberculosis with a leaking left heart.

The idea of emetine as a remedy for hemoptysis originated apparently in France. Flandin and Joltrain, for example, made a report in the *Presse Médicale*, in April, 1913, regarding the value of emetine in tuberculosis. Raeburn, in the *British Medical Journal* in the following year (p. 703), followed with an enthusiastic report which speaks for itself. He divides his cases for emetine treatment into three groups: (1) Bronchitis, where no tuberculosis could be demonstrated. If the heart was in good condition, these cases usually showed improvement, which generally continued after the emetine was stopped. This is surely far from conclusive, as the natural rejoinder is that if ipecac had been used in the place of emetine, improvement might well have been still faster. (2) Cases of clinical tuberculosis with no tubercle bacilli in the sputum. Raeburn here admits that improvement might have been charged to diet and hygiene, but thinks there was a really beneficial action in the congestive stage. (3) Cases with tubercle bacilli in the sputum. Here his results were much less regular, and he draws no conclusion of specific improvement. One may conclude justly that the emetine showed its only beneficial effect in the cases of bronchitis and in tuberculosis where the bronchitic symptoms were prominent, and that it was the expectorant action of emetine which aided, and not any direct influence on the tuberculous disease. In some twelve cases of hemoptysis in which emetine was administered, all in advanced pulmonary tuberculosis, Reed has failed to see any favorable effect which could not be explained by other factors more plausibly than by the emetine.

To summarize, then, in so far as emetine has a beneficial action in tuberculosis, it would seem to be due to its expectorant properties, and if so, other preparations are preferable. In so far as emetine has a beneficial action in hemorrhage, it would seem to be due to the indirect result of decreasing blood-pressure, and if so other drugs would be more effective, in that they

would produce a similar result more safely and without the specific action of emetine on coagulation.

APOCODEINE — A NEW LAXATIVE WITH EXCEPTIONAL ADVANTAGES.

The *California State Journal of Medicine* for September, 1916, contains an article by ALVAREZ in which he calls attention to this use of apocodeine, a use which was suggested many years ago.

It is well known that most of the opium derivatives have, besides the sedative effect on the nervous system, a stimulant effect on the bowel. To be sure, some cause constipation, but, as has been shown for morphine, this may be due to too much stimulation, resulting in localized spasms. Codeine acts like a purge on animals. Looking over the literature on this series of drugs, it seemed that apocodeine was the most promising one for his purposes. For those who have never heard of it, he will say that it is made from codeine as apomorphine is made from morphine. Just as apomorphine has much less of the sedative action and much more of the emetic action of morphine, apocodeine has lost most of the sedative action and has gained more of the laxative effect of codeine. Besides, it has a pronounced nicotine-like effect, paralyzing the sympathetic nerve cells and blocking inhibitory influences to the bowel. It also improves the tone of the intestinal muscle, and by vasodilatation improves its blood supply. This again favors increased peristalsis. Certainly it has the most laxative effect of all the opium derivatives.

Discovered by Matthiesen and Wright in 1870, it was tried out on a few patients in England and in France. Some thought it would be a good expectorant. Others found that it was an excellent hypodermic purgative that could be given, for instance, to the violently insane. Since then it has remained a laboratory drug, unknown to the profession, but used by physiologists when they wish to paralyze sympathetic ganglia.

Three years ago Alvarez obtained some of the drug and soon found that it worked very well with a dosage of from 1/15 to 1/10 of a grain. Ordinarily he has given it with atropine in the following prescription:

℞ Apocodeinæ hydrochlor., gr. 1/15 to 1/10;
Atropine sulph., gr. 1/200 to 1/150;
Sacch. lactis, gr. ij;

Ft. caps. tales No. xv. Sig.: One b. i. d. or t. i. d. p. c.

He seldom exceeds the smaller dose of atropine, as many people who need the apocodeine are so sensitive to drugs that even gr. 1/150 makes them uncomfortable.

In suitable cases, such a capsule taken two or three times a day will insure a normal, formed stool without any discomfort. In three years only three people, all of them very sensitive to drugs and to nervous influences, have had to complain of anything more than this mildly laxative effect. They were purged quite actively without griping or other discomfort. When the drug works well there is no need of increasing the dose. A number of people have taken it pretty steadily for three years and still get good results from 1/15 grain twice a day. Many have remarked upon the ease with which they could taper off and discontinue its use. There is none of that fatigue and emptiness of the bowel which interferes so much with the resumption of normal activity after purgatives.

Although as an opium derivative the drug happens to come under the Harrison Act, there is no danger of habit formation, as apocodeine gives none of that feeling of well-being and comfort that makes the chance user of morphine wish to repeat his experience. Alvarez can state positively that in the three years no patient has shown any tendency to habituation.

Alvarez wishes to emphasize the fact that apocodeine is not a sure cure for constipation. We cannot expect it to work well when the trouble is due to binding adhesions, pelvic disease, or some form of megacolon. Besides, it has failed in some of the cases that seemed eminently fitted for its use. Possibly larger doses would have worked, but he has never exceeded 1/10

grain three times a day, for two reasons: one that he often had cause to suspect that the case was not suitable; the other that, especially since the war began, the drug has been expensive (seventy-five cents a grain, dispensed). A greater experience with the medicine and a better knowledge of the mechanism of constipation may give us an explanation for these failures. In a few cases in which neither liquid petrolatum nor apocodeine worked well enough separately, their combination brought about a most satisfactory action.

THE USE OF SALT SOLUTION BY THE BOWEL (MURPHY METHOD) IN INFANTS AND CHILDREN.

The *Archives of Pediatrics* for October, 1916, contains an article by GRAHAM in which he tells us he has been greatly impressed, although not surprised, by the excellent results following the Murphy treatment in profuse diarrhea due to intestinal infection and in the summer diarrhea of children, the symptoms being greatly relieved when the fluid lost by the bowel was replaced. Its use in dysentery is being more widely adopted each year, while in Asiatic cholera Michael found that 40 per cent of the cases treated with saline infusions recovered, while only 22 per cent of those not so treated showed any improvement.

A loss of body fluid from persistent vomiting or any other cause can be replaced in whole or in part by normal saline solution, injected into the bowel and then absorbed. Graham finds, too, in slow proctoclysis an invaluable aid in the treatment of cyclic vomiting, pylorospasm, pyloric stenosis, and esophageal stricture, although in the two conditions last mentioned nutritive enemata must sometimes be given alternately with the injections of salt solution in order to maintain the nutrition.

His experience with the Murphy method in treating pylorospasm has been very gratifying, and in the case of a twenty-five-days' old infant with severe jaundice, persistent vomiting, and diarrhea, the stools being largely composed of mucus, which was black, the employment of the Murphy method, as a last resort, was followed by speedy recovery.

Fischer has had occasion to employ the Murphy treatment in erysipelas, and advocates its use when there is marked toxemia and high fever. It has also been used in typhus fever.

Graham regards the infusion of normal saline into the bowel by the drop method as a most valuable aid in the treatment of all the exhausting diseases of infancy and childhood, and believes that by its stimulating effects threatened collapse can often be averted. In feeding children and infants who cannot retain nourishment given by mouth, a nutrient enemata given drop by drop is often better retained and absorbed than when given more rapidly.

Sugar solution has recently been given by proctoclysis in cases of diabetic acidosis, in an effort to promote continuous absorption, and in some instances the acidosis disappeared.

Lesné administers artificial serum by proctoclysis, giving 50 to 100 Cc. of isotonic serum, or 4 per cent of sugar solution, and claims that absorption is afterwards as rapid as when these fluids are injected subcutaneously. He also reports excellent results in children of all ages suffering from gastroenteritis, cyclic vomiting, acute alimentary anaphylaxis, and typhoid fever. He states that, where urotropin or adrenalin was added, the action of the drug was better by rectum than when given by mouth.

Proctoclysis in puerperal fever and in surgery is familiar to all in the profession; but experience has shown that it is even more effectual in the treatment of surgical conditions in children than in adults. Not only does it greatly relieve postoperative thirst and nausea, but after hemorrhage from the esophagus, intestines, or lungs, and when operative or traumatic hemorrhage has produced only mild symptoms, the absorption of large quantities of saline solution from the bowel quickly replaces the fluid lost by hemorrhage.

There are three essential points in giving

salt solution by the Murphy method: First, the solution must be under very low pressure; second, there must be a free to-and-fro movement between the reservoir and rectum; third, the solution must be warm when introduced.

To guard against too great pressure on the fluid, the reservoir containing it should not be elevated more than 12 inches above the hips, and the tube carrying the fluid to the rectum should be compressed so that the solution will trickle into the rectum drop by drop, a half-pint escaping in this manner each hour. The hips should be slightly elevated, and a medium-sized catheter may be introduced four or five inches into the bowel, or a glass tube may be used.

To secure the ready absorption of the fluid, the solution should be at a temperature of 98° to 100° F. when it enters the rectum; as it cools it is taken up less quickly by the bowel, and at 60° F. absorption is much retarded. Since the solution cools while passing from the reservoir to the rectum, the fluid in the reservoir should be kept at a temperature of at least 110° F., this being accomplished by surrounding the irrigation jar with hot-water bags. A pint of solution is placed in the reservoir every two hours, and, at the end of an hour, when one-half of it has trickled into the bowel, the flow is checked for an hour, so that the bowel may have a rest.

Where there has been great loss of fluid, it may be necessary to inject the saline much more rapidly.

One must be careful, however, not to overdistend the bowel, for, although distention is the normal condition of the intestine, overdistention will expel the solution.

It is also possible to give by this method so much fluid that it will produce general edema and pulmonary congestion. Therefore, whenever slight edema of the tissues is noted, the treatment should be discontinued until this disappears, when, if necessary, the infusions may be very slowly resumed.

The preparation of the saline solution is a matter of no little importance, although it frequently receives but little consideration. The usual custom is to dissolve a teaspoonful of table salt in a pint of water, which is, at best, an extremely inaccurate method of calculating, since a teaspoonful may be from 100 to 300 grains, according to whether it is a level or heaping teaspoonful.

In addition to the drachm of sodium chloride, some authorities dissolve a drachm of calcium chloride in each pint of solution. Recently the use of ordinary tap water has been suggested in place of normal saline, since it is quite as readily absorbed, and in high fever, or when the rectal temperature is high, relief has been afforded by injections of tap water unheated.

The length of time proctoclysis should be continued varies with the aspects of the case. In children, especially, it depends upon how they tolerate the presence of the tube within the rectum. In infants the mere fastening of the tube to the buttocks with adhesive strips will suffice; but older children must be persuaded to allow the tube to remain, for it may be so annoying that a sick child will try to pull it out.

The usual duration of this treatment is from four to six days; but if the rectum is not unduly irritated, and the indications warrant it, proctoclysis may be kept up without interruptions for ten days to two weeks.

THE USE OF PHYLACOGENS.

Doyle in the *Louisville Monthly Journal of Medicine and Surgery* for December, 1916, points out that before making use of this agent it is absolutely essential that an accurate and definite diagnosis should have been made. No one is any more justified in using, for instance, rheumatism phylacogen in a "suspected" case of rheumatism without determining the special type of rheumatism, or that it is a case of rheumatism at all, than he would be in injecting a dose of strychnine in a case of high arterial tension without first determining that the strychnine was thoroughly and properly indicated in the case; or to administer a

dose of quinine in a case of anemia without full justification for its administration. Not infrequently is the failure to obtain results with phylacogen attributable to no other cause than that of improper and inadequate diagnosis. This fact is frequently illustrated in "referred" cases. The physician will tell you he has "a case of rheumatism" and that he has used rheumatism phylacogen, and there has been no improvement. On investigation and examination it will be found that the patient has not ordinary rheumatism, but will exhibit symptoms of and have all the laboratory confirmations of gonorrheal involvement, and many will present the various "plus" of the Wassermann reaction. In such cases it is easy to see why rheumatism phylacogen had failed to produce results. In gonorrheal cases gonorrhea phylacogen promptly produces the desired and expected results; and in other cases proper treatment will give prompt relief.

Now it is not meant, nor does Doyle believe that any one ever intended to say, that this remedy is a great "cure all" in every case wherein it is properly used. Correctly administered in the right cases it will cure or markedly improve the vast majority wherein it is properly indicated. While all of the instances wherein failure to make diagnosis or wherein it has been incorrectly used have not been cited, he is quite sure that what he has already said is sufficient to bear out the statement that correct diagnosis is absolutely necessary.

Many mistakes are made in the failure to properly administer the remedy and to continue its administration over a sufficient length of time. Many cases have been observed wherein splendid starts have been made toward marked improvement, and either a misunderstanding of the action of the remedy, a disinclination to persevere in well doing, or ignorance concerning the action of bacterial derivatives within the human, has caused the attending physician to discontinue the use of the remedy entirely too soon. Others fail to obtain results because of the fact that they are overzealous and a bit too enthusiastic concerning the effect of a "new" remedy which they are about to use for the first time, and consequently in their overenthusiasm they give or use too large an initial dose. It is always advisable to begin on a smaller dose and study the patient's reaction and tolerance before making use of a larger dose. If one would be content to "make haste slowly" far better results would be obtained here as in other lines of therapeutic endeavor. There is a growing belief, which is undoubtedly well founded, that some individuals possess idiosyncrasies to vaccines, bacterial derivatives, and serum, just as some have to other therapeutic agents. Doyle holds, therefore, that one is no more justified in giving a large initial dose of any of these agents, without first learning the tolerance, than he would be in giving a huge initial dose of quinine in a case wherein the tolerance is not known.

Experience in "vaccine" work teaches us that one very great element is constantly overlooked. Doyle refers to the specific or individual blood content. In the rarest instances are there changes or early improvement produced in all of the blood elements. Improvement of the entire blood content is most desirable. Consequently the work is always supplemented by the administration of those agents which deal with the improvement of the entire blood picture. Because of the splendid results obtained, the chief supplemental aid consists in the intramuscular injection of the arsenite of iron and strychnine. Many cases which have apparently improved slowly in all kinds and types of vaccine therapy have shown a remarkable rate of improvement on the addition of properly selected tonics.

Experience has proved that the intravenous method of administration is vastly superior to any other form of phylacogen therapy. While the reaction, if any, appears early, it is not so prolonged nor as severe nor as displeasing to the patient as when given intravenously. Not as large a dose is required. Studies of the blood have proven more marked changes of a beneficial nature follow intravenous dosage than are seen following the intramuscular method.

To sum up, it is easily seen that correct and adequate diagnosis, proper selection of the phylacogen remedy, plus careful observation of the patient, his tolerance, and reaction, are essential in this particular line of therapy, and it is close observation of these conditions that will do much toward obtaining results which may always be expected when phylacogens are used. Doyle is deeply interested in this subject. The results have been constant, and he might say, with pardonable pride, brilliant and certainly most satisfactory both to patients and himself.

SOME PRINCIPLES OF INVESTIGATION IN BLOOD-PRESSURE PROBLEMS.

In the *British Medical Journal* of September 23, 1916, McQueen asserts that a study of the literature of blood-pressure measurements cannot fail to impress the reader with the lack of method shown by some clinicians in the choice and arrangement of their observations. A measurement of blood-pressure—in most cases the systolic—is chosen as an item in the routine examination of the physical features of a clinical case. Let us consider what knowledge is really obtained by taking the systolic blood-pressure. The information contained is no more than that during the period of observation the systolic pressure was equal to the weight of a column of so many millimeters of mercury; it may be a high blood-pressure, or it may be a normal blood-pressure during systole. When the systolic pressure only is estimated, the maximum height to which the pressure rises during so many beats of the heart is given, but nothing whatever is shown as to how far it sinks during diastole, nor as to the extent of the swing of pressure between each diastole and each systole of the heart. In the laboratory to record the blood-pressure changes with the maximum manometer alone would be at once recognized as futile.

In recent years some observers have added an estimation of the diastolic pressure, and by subtracting the prevailing diastolic pressure from the prevailing systolic pressure a record of the pulse-pressure range is obtained. To these data they have added observations on the rate of the heart-beat and the rate of the respiratory rhythm.

When this information is available we have an isolated picture of the heart's activity, and can say that each contraction of the left ventricle is able to add to the existing diastolic pressure a certain increment of pressure, and this increment of pressure delivers a shock to individual organs—for example, the kidneys; that this shock is borne by the walls of blood-vessels which are already under a certain measured existing and permanent strain, the diastolic pressure.

Such measurements are complete, but a thorough knowledge is not thus obtained of the circulatory phenomena involved in any disease when such observations are carefully made and carefully recorded from day to day.

The feature to be studied in the circulation in health and in disease is the power of the heart in conjunction with changes in the peripheral blood field to adapt itself quickly and efficiently to extra strain. In health every one is constantly making calls on the power of the heart and peripheral field to adjust themselves either to extra strain or to diminished strain. Consequently, although advance is made when the scope of the measurements of the clinicians is broadened from isolated measurements of systolic pressure and pulse-rate to that of systolic, diastolic, pulse-pressure range, rate of heart-beat, rate of respiratory rhythm, these measurements are still measurements made under the uniform conditions of repose on a bed in a hospital ward.

Physiologists appreciating this point have published observations of blood-pressure before and after muscular exercise in healthy subjects. Thus, Pembrey has made a series of interesting observations. Records have been taken of blood-pressure before and after running and before and after the lifting of heavy weights. Such observations, though useful, are also incomplete, because they do little more than serve to show what changes have taken place in the

blood-pressure after the exercise is over. They vary with the power of the circulatory system to adapt itself quickly to the change from activity to repose. As all measurements take time to perform, and as the circulatory system in healthy individuals has great power of rapid adaptation, the conclusions drawn from the measurements are apt to be vitiated.

Consequently if a satisfactory knowledge of the heart and peripheral circulatory system in the human subject in health and disease is to be gained, it is necessary to examine and record the changes in systolic, in diastolic, pulse-pressure range, rate of heart-beat, rate of respiratory rhythm, during the strain thrown on the heart by exercise, not after it is over. The systolic pressure can be estimated during exercise either by the auditory or the tactile index, but the diastolic index is estimated by the auditory index alone. Consequently it is best, perhaps, to adhere to the auditory index for both measurements. Previous to the outbreak of the war McQueen had found in Aberdeen that it was impossible to get satisfactory observations of systolic pressure, diastolic pressure, rate of heart-beat, and rate of respiratory rhythm in a series of medical students who kindly volunteered their services. As the auditory method is used the work done must be such that the arms of the individual tested should be reasonably rigid and that the exercise should produce as little noise as possible. The subject was placed on his back on a polished table, and the exercise consisted in rhythmically drawing up his feet and legs as in swimming on the back. The mildness of this exercise depends on the length of time that it is kept up.

It was thus possible to draw graphs of the systolic and the diastolic pressure, with observations on the rate of the heart-beat and the rate of respiratory rhythm during the exercise. It is true that the observations of systolic and diastolic pressure cannot be made simultaneously, especially with increased rate of heart-beat. But when such observations are numerous, and are plotted alternately over a considerable period, the importance of taking them simultaneously is practically *nil*.

Such graphs give a true picture of the response of the heart and of the peripheral system to a given amount of work over a given period of time. We can trace how the circulation as a whole adapts itself to the changed conditions.

It is also possible to examine the circulatory phenomena during exercise in the erect posture by the auditory method. The exercise employed was the working of a heavy but silent lathe with one foot. Such graphs enable us to see how the heart adapts itself to gravity and to exercise simultaneously, and from such graphs the efficiency of the mutual adjustments of the heart and of the vasomotor system can be tested.

The ranges of blood-pressure, both systolic and diastolic, in healthy and in unhealthy subjects vary greatly. It is obvious, then, that the response to a given amount of work of normal adults with a blood-pressure of, say, 130 systolic, 75 diastolic, and a rate of heart-beat of, say, 78, should be investigated. Having established the normal graphs, the investigation should be carried on cautiously in people with abnormal systolic and diastolic pressures. By so doing we may learn to appreciate what is the real significance of any abnormal blood-pressure range.

Translating these problems into more concrete form, we may ask how a subject, whose diastolic pressure is originally high, fares when tackling a given amount of work. We know that, theoretically at least, he starts with the disadvantage that a considerable amount of cardiac energy in excess of the normal has to be spent in opening the aortic valve. Or we may take the case of aortic incompetence with initial high systolic pressure and initial low diastolic pressure, and ask what series of blood-pressure changes take place during exercise. Does such a case develop during exercise a high diastolic pressure in spite of incompetent valves? McQueen puts these questions simply to show that in the whole of the literature of blood-pressure we have no guide to the true significance of blood-

pressure ranges which depart from the normal. We have never isolated these departures from the normal and tested them against the performance of a given carefully graduated amount of work. We do not know how nature has adapted both the heart and the peripheral circulatory system to overcome initial defects. We may state that breathlessness on exertion is a cardinal symptom, but has the case developed this breathlessness on exertion because the heart has failed or because the adjustments his peripheral circulatory system can make are inadequate?

[We reprint this article because it has such an important definite bearing upon the administration of cardiovascular tonics and sedatives.—Ed.]

RETRACTION OF THE UTERINE MUSCLE ASSOCIATED WITH OBSTRUCTED LABOR.

Hicks in the *British Medical Journal* of October 14, 1916, would make the following suggestions in regard to this obstetrical condition:

1. Be on your guard when dealing with a short, thick-set woman with a square head and short long bones.

2. A high position of the fetal head, occurring in a primipara, should at once denote serious trouble.

3. Measure the diameters of the pelvis, but do not place too much store upon your estimate. The brim may be obliquely distorted, and this will prevent the head from entering the brim, and at the same time will not show up in your calculations.

4. Cut-and-dried rules on pelvimetry are useful only in severe contractions of the pelvis.

5. Remember that to apply forceps to a fetal head which is movable and high above the brim is an obstetric operation requiring the most careful consideration, and should only be undertaken after careful examination of the condition of the uterine muscle around the neck of the fetus. If the examining hand can be passed easily beyond the shoulders of the fetus, an attempt at delivery with instruments may be made. If there is the least evidence that the uterine muscle is retracting round the neck of the fetus, Cæsarian section should at once be performed.

6. When once the retraction ring has formed around the neck of the fetus, it will grip it firmly until the mother is almost at the point of death.

THE MORPHINE-HYOSCINE METHOD OF PAINLESS CHILDBIRTH.

In the *British Medical Journal* of October 14, 1916, Haultain and Swift of the Royal Maternity Hospital in Edinburgh give us their views as to the value of this plan of treatment. The following is a summary of special points which they think are most important:

1. In the case of a primipara the first injection must not be given too early, as it tends to stop the pains. The rule of giving the first injection when the os admits two fingers, and the pains are regular, is a useful one. In the case of a multipara, however, the injection cannot be given too early after the pains have started. It is generally found that the first injection is given too late.

2. The second injection, namely, the first 1/450 grain of pure hyoscine, should be given about an hour after the initial injection, whether the patient is well under or not. If this injection is delayed the effect of the morphine tends to wear off, and the future injections of hyoscine will not take effect.

3. The injection can with safety be repeated either at hourly or three-quarter-hourly intervals.

4. Do not repeat the morphine in the latter part of the second stage or the child will most probably be born oligopneic. If the hyoscine is not taking effect, then it is well to give the mother a slight whiff of chloroform; thus the hyoscine is allowed to work and the patient gets again into the condition of "twilight sleep."

5. The patient's friends must be kept away from the room, which ought to be quiet and darkened.

6. Patients, if thirsty, must be given water to drink.

7. Remove the baby to another room after birth, so that the mother cannot hear the cries, otherwise she may remember the cry and so piece together and imagine her whole labor.

From their experience Haultain and Swift think it may be stated that we have a safe and efficient means of managing labor painlessly in the majority of cases. It requires, however, the constant attendance of a competent attendant. This rôle can be efficiently undertaken by a reliable nurse under supervision, which makes its adoption in better-class private practice possible to the medical practitioner.

It is of special value in primiparæ, in whom as a rule the first and second stages of labor are long and painful.

It is also of great value in a prolonged second stage, due to a large head or slightly contracted pelvis, as it allows of head molding without unduly exhausting the patient.

So far as amnesia is concerned, it is of little use to commence the treatment during the second stage.

The strength of the uterine contractions is not diminished, hence its advantage over chloroform. There are no contraindications to its use beyond extreme restlessness, which is very exceptional, and probably due to an idiosyncrasy.

The absence of exhaustion after even a long labor is one of its greatest advantages.

Thirty-seven of the forty patients rose from bed on the third day after labor.

It is regrettable that such a great deal of publicity has been given to the subject, and that prominent specialists have allowed themselves to be exploited through the lay press, as the lay community suffers from the want of knowledge and sense of proportion which allows of an estimate of its value under various conditions, and is therefore too apt to attempt to force the hand of the careful practitioner. At the same time, the method of management of labor is so good from the point of view of relief of suffering, that it may help materially to bring about the increase of the birth-rate so much required, which is perhaps the only argument in favor of publication in lay journals, etc.

[The best obstetricians in America disapprove of this method of dealing with labor. —Ed.]

THE ADMINISTRATION OF CERTAIN DELIQUESCENT AND LIQUID DRUGS IN CAPSULES.

In the *Journal of the American Medical Association* of October 14, 1916, Davis points out that as it is so much pleasanter to take medicine in capsules than in other ways it has been his habit when he can do so to administer it in them. Pharmacists find it impossible to dispense extemporaneously in capsules many deliquescent substances and most liquids. A dozen or more years ago his attention was called to the possibility of dispensing many such substances in a capsule by using a wax mass. In this way potassium iodide and similar drugs can be given, also guaiacol, oil of sandalwood, and many other liquids which one wishes to prescribe in doses of from 5 to 10 minims. The iodides can be given in doses of 10 or 12 grains (from 0.5 to 0.8 gm.), and the mass will be readily absorbed, as is shown by finding iodine in the saliva in three minutes or less after such a capsule is swallowed.

The capsules are permanent, keeping for weeks orlinarily and in the hottest, dampest weather, if placed in a corked bottle.

For the making of a pill to be placed in a capsule containing sodium or potassium iodide in doses of 10 or 12 grains (from 0.5 to 0.8 gm.), about 1½ grains (0.1 or 0.15 gm.) of the wax mass is needed. Red mercuric iodide and other drugs can be incorporated in the same mass if they are required.

To make a pill containing guaiacol, oil of sandalwood, or similar liquids in doses of 5 minims or thereabouts, the same quantity of mass is needed.

Davis has often given iodine incorporated with this mass, and has obtained from it as prompt and as good results as when it was given in solution. But he has found it

possible to give it, without discomfort to patients, in larger doses. For instance, from 2 to 4 grains (from 0.15 to 0.25 gm.) can be given in this way, though he rarely has given more than 2½ grains at a time. He has made it a practice to dilute the iodine well with the mass in order that the pill may not cause gastric discomfort, and possibly he uses more of the mass than is necessary for this purpose. He usually prescribes at first 1 or 2 grains (0.05 or 0.10 gm.) with 5 grains (0.3 gm.) of wax mass. Undoubtedly, the oil in the mass is responsible for carrying the iodine and for diluting it and releasing it so as not to cause gastric discomfort. When administered in this way, iodine appears with its usual promptness in the saliva. Cascara, aloes, codeine, and many other drugs can be incorporated with it when they are needed.

The wax mass is made of one part beeswax and three parts of castor oil. These ingredients are melted and mixed by heating them gently. When liquefied and thoroughly mixed, the mass is allowed to cool. It makes a somewhat granular pill. Davis does not know who invented the mass, and he has rarely found a pharmacist who knew of it.

He has never seen the castor oil produce looseness of the bowels, and it would not be expected to, so little of it is administered at a time.

Guaiacol and oil of sandalwood and similar substances can be readily mixed with from one-half to equal parts of beeswax and made by gently heating into a mass. Such a one, however, is needed only when a prescriber is using these substances with frequency.

BLOOD-PRESSURE.

The Prescriber for October, 1916, contains an article by LUKE in which he discusses this subject. He states that as regards alcohol and tobacco care is necessary, and the strictest of moderation, if not complete abstinence, should be observed. So far as alcohol is concerned, its action as a diuretic is rather favorable, but, on the other hand, the initial rise of blood-pressure caused by it is undesirable, and in advanced cases may be dangerous. A mild cigar after dinner, or two or three pipes a day, may do no harm, but where there is cardiac irregularity are best done without. Constipation of the habitual kind is one of the most potent factors in sending up and maintaining a high blood-pressure, and should by every means be avoided. In his own experience and that of most physicians men are much less prone to this than women, and less apt to become resigned to it. In women it often starts at badly managed schools, is again encouraged when menstruation starts from a reluctance to disturb "dressings," and is further enhanced by marriage and the occurrence of pregnancy. If it exists, however, from any cause in the patient under observation, it should be combated by every possible means. Apart from drugs, which are chiefly palliative, he has found sinusoidal currents to the bowel most curative. On the whole one prefers some mineral water with adequate proportions of sodium and magnesium sulphates, and the weekly or biweekly administration, for a time at least, of calomel and the pill of colocynth and hyoscyamus. The Carlsbad sprudel salt suits some people remarkably well, but there are many artificial salts and waters that are quite admirable. Kruschen salts Luke has a great respect for, as some hundreds of patients have found it "just the thing." There is no doubt that an annual visit to any spa with purgative waters, together with regulation of diet, quite apart from any general treatment, has a most excellent effect on blood-pressure in cases past middle life. Women drink too little at all times at home, and they drink waters either purgative or alkaline in appropriate quantities at a spa, and probably keep up the habit more or less when they return home.

So far as drugs are concerned, a plebiscite of the profession would find an overwhelming majority for potassium iodide. And yet now and again one finds patients

very much annoyed at having an iodide headache, and lacrimation substituted for "pressure in the head," a condition necessitating change of medicine, or, if they will allow you, adjustment of the dose. As regards organic iodine compounds (iodipin and the like), Luke's impression is that though they are free from tendency to produce unpleasant effects, they are less efficacious therapeutically.

Sodium nitrite he has very little experience of, and thyroid extract, at all times varying greatly in its effect on the individual, he has not used in hyperpiesis. Nitroglycerin and liquor trinitrini are more suitable for cases in which the symptoms are acute. To the average person with a moderately raised pressure the first obvious sensation produced by nitroglycerin will often be a very distressing headache, which is regarded as more than counterbalancing the possible benefit.

The somewhat ancient and heroic process of venesection is also rather to be reserved for severe cases in which symptoms are acute, but in the experience of many it gives great and immediate relief. Calomel or blue pill is often helpful, and Broadbent spoke highly of it in cases of insomnia due to high blood-pressure.

But in all these considerations one has to bear in mind that one's efforts are directed to amelioration of the condition, relief of symptoms, and prolongation of life, rather than to effect a cure of the underlying condition.

THE EXCRETION OF HEXAMETHYLENAMINE BY DAMAGED KIDNEYS.

In the *Boston Medical and Surgical Journal* of October 19, 1916, G. G. SMITH reminds us that in a previous paper on the excretion of formaldehyde in the urine, he stated that "the kidneys of chronic nephritis, to judge from a few observations, excrete urotropin much more slowly than do normal kidneys. One dose of 15 grains has given traces of formaldehyde in the urine for thirty-six hours." From the very limited number of cases of nephritis which he has studied in this connection, it would appear that serious disease of the glomeruli greatly decreases the ability of the kidneys to excrete hexamethylenamine. The diminished excretion of this drug in chronic glomerulonephritis does not affect the position of hexamethylenamine in the treatment of renal infections because, according to Cabot and Crabtree, colon infection affects the epithelium of the tubules. Excretion of hexamethylenamine by the glomeruli is not interfered with, and the drug is put out in good quantity.

In view of the above findings, Smith believes that the statement of Falk and Sugiura in regard to the low output of hexamethylenamine by kidneys with impaired function is of very little practical importance. Close analysis of their paper shows several probable sources of error in their procedure, and these errors all tend to represent the urotropin output as less than it really is. Of the 24 pathological cases studied by them, 12, or one-half the number, fail to present evidence of any value pointing to true renal disease. These 12 cases, furthermore, show a lower output of urotropin than do the 12 cases of renal disease in the same series.

No conclusion as to the value of urotropin in those cases in which it might be expected to do good can be drawn from the work of Falk and Sugiura.

As positive evidence on the question of the output of urotropin by infected kidneys, Smith has presented facts drawn from a study of 10 cases of undoubted renal disease of this type. In every case urotropin was excreted; in three cases, in a strength of 1-10,000; in two, 1-30,000; in one, 1-40,000. It was weaker in the other four, although strong enough to give a definite test with Burnam's method. In chronic nephritis of advanced degree he has found in three cases a diminution in the output of urotropin, which would be a serious factor in its employment as a therapeutic agent. Fortunately, in such cases it need seldom be employed. In kidneys damaged by infection, even to a very marked degree, the drug may be excreted in a strength as high as

1-10,000. One must bear in mind the very important fact that no matter how much urotropin is excreted, it will be useless as a bactericide unless it is broken up into formaldehyde by urine which is definitely acid.

CHLORINE AS A THERAPEUTIC AGENT.

HALLDORSON in the *Journal-Lancet* of October 15, 1916, gives a short account of his experience with chlorine in the form of the U. S. P. solution for the last ten years, or since he first began to make use of it, in August, 1906.

He first tried it as a last resort on a patient in the third stage of pulmonary tuberculosis—surely a severe test of the usefulness of any drug. Its effect was so unmistakable and the improvement of the patient was so rapid and persistent that in six months her condition seemed to warrant a belief in an ultimate recovery. She died in March, 1909.

As a matter of fact, the first results from the use of this remedy were so uniformly good that in his ignorance and inexperience Halldorson began to imagine that the long-looked-for "cure for consumption" had at last been found. It is needless to say that he has long since gotten away from that idea. Nothing short of the elixir of life itself will ever prove a specific for an infection of such endless variety, in kind and proportion, as the one commonly known as pulmonary tuberculosis, where, even should a specific against one of the germs be found, nature would be left unaided to cope with the rest, so that the net result would be *nil*, or next to *nil*.

The one exception is when the infection is due to the pneumococcus and the tubercle bacillus, as when tuberculosis flares up after a case of pneumonia. Here nature seems to use the same neutralizing material for both toxins produced, and in these cases, usually considered so hopeless, chlorine has proved a valuable aid to recovery.

As for other cases of consumption, consumption here meaning far-advanced open tuberculosis, with broken-down immunity, Halldorson has ceased to look for improvement from any mode of treatment.

But through mixed successes and failures he has year by year come to know the usefulness of chlorine as a therapeutic agent. It is as follows:

1. In all cases of pneumonia when the chlorides in the urine become scanty.

2. In tuberculosis, especially acute, "closed" cases, such as the typhoid form, and those of oncoming chronic trouble—the breaking down of immunity, whatever the cause. In far-advanced lung cases it will, as stated above, probably be found of little or no permanent value, but usually will do some good, if only by improving appetite. The same thing may be said of meningitis, especially when acute; also of chronic bone disease. Its chief value is during the early stage of tuberculosis infection, whether from an outside source or from the breaking down of an old focus, and before a new lesion is started in bones, lungs, meninges, or elsewhere.

3. In anemia and malnutrition in children when due to latent tuberculosis. As a rule, children respond to the action of this remedy better than adults.

4. In certain cases of summer diarrhea in children with high fever, great prostration, and restlessness.

5. In colds and la grippe. This he merely mentions, for he has had little experience with it. It is especially of value for those with latent tuberculosis, where a stitch in time will often save the whole garment.

It goes without saying that a statement like the one above should be made with the utmost caution. When, on the one hand, one is dealing with self-limited diseases like pneumonia, and, on the other hand, with tuberculosis, with its vagaries, long-continued course, and frequent surprises for better or for worse, the greatest care should be exercised in attributing therapeutic value to any remedy or any mode of treatment. This cannot be too strongly emphasized. But when the use of a certain drug is followed by improvement in the same disease with sufficient regularity to exclude chance and coincidence, it is only fair to

attribute the result to the drug; and, furthermore, when a good and sufficient physiological reason can be found to explain this effect, it would seem that the faith in the remedy is well founded.

Now, the physiological reason for the use of chlorine in pneumonia is the well-known fact that chlorides in the urine diminish in all cases of that disease, and that, if they disappear altogether, the patient invariably dies. The reason for this is that the pneumonia exudate is very rich in chlorides, so much so that it is even possible to tell that an extension has taken place in the lungs by a sudden diminution of chlorides in the urine. And on the other hand, when resolution begins, the urine chlorides correspondingly reappear.

The dose of chlorine solution is half a drachm to an ounce, and on account of its disagreeable physical characteristics it should be combined with some vehicle. Any of the tasteless extracts of cod-liver oil will answer the purpose, especially the one prepared by Parke, Davis & Company, with which it forms a very good mixture.

In pneumonia this may be given as follows:

℞ Sol. chlori,
Emuls. ol. morrh., ää ounce iv.

M. Sig.: Half an ounce every three or four hours, depending on the condition of the patient. If the case is very serious this may be given as often as every half-hour until relief is obtained The dosage is the same for acute tuberculosis.

In chronic tuberculosis the same dose may be given before meals and at bedtime. Children under four years may be given a teaspoonful of the above mixture three to six times a day, according to what condition is to be met. To a child under one year twenty drops of chlorine solution in forty drops of extract of cod-liver oil may be given three times a day. An overdose will cause irritation of the stomach, which, however, is soon overcome by the use of sodium bicarbonate. The chlorine should then be stopped for the time being, but if necessary may be resumed within a few days in somewhat smaller doses.

Colorless chlorine water is useless. Nothing but the greenish solution described in the U. S. P. should be made use of.

To be of material benefit a drug must be well understood by those who would make use of it. Chlorine is no exception to this rule. Let it never be forgotten that it is no cure for any disease. All it does is to produce a condition in certain diseases under which the curative forces may act to better advantage, by supplying a material of which nature's store is becoming exhausted. The saying that a physician is a hod-carrier to nature is therefore never more true than when it is employed.

[We hope the author is correct in his conclusions, but we fear that he is unduly enthusiastic.—Ed.]

A DEVICE FOR DRAWING SMALL AMOUNTS OF BLOOD.

Bayles in the *Medical Record* of September 30, 1916, wishes to offer to those who have occasion to draw small quantities (6 to 30 Cc.) of blood (Wassermann) the description of a small, compact outfit, an improvement on that furnished by the New York Health Department. It is the usual experience, when the blood is drawn either by the physician unaided or with the assistance of patient or nurse, that more or less of it is spilled on the patient, doctor, or floor, after the needle enters the vein and before the receptacle is procured and placed in proper position.

As seen by the accompanying diagram, a rubber stopper is inserted in place of the ordinary cork. This stopper is fitted with a short, hollow needle, protected by a flange which is inserted through a small opening in the stopper and which acts as a vent. Another opening is made at the outer margin of the stopper, opposite the vent, for the insertion of the

needle furnished by the department, and is so placed to put it in line with the vein; the beveled point must face the operator when the needle is inserted.

The technique is simple: Remove the cork from tube, insert rubber stopper, push needle through the rubber stopper as indicated by mark on stopper as shown in diagram. We thus have a needle fitted into a tube, the latter serving as a handle, and the outfit is used in much the same manner as one would use an awl. After the desired quantity of blood is withdrawn the rubber stopper is removed and the original cork inserted. The outfit is then ready to return to the laboratory for examination.

The rubber stopper should be washed under a faucet, sterilized, and placed in alcohol, ready for future use.

THE RATIONALE AND PRACTICE OF CHEMOTHERAPY.

The *Medical Record* of October 21, 1916, in an editorial states that our notions of chemotherapy are at present in an unsettled state, for we do not know how many forms of therapeutic activity are to be comprised under this term, nor, so far as we have gone, are we sure in practice even of the parasitotropic action of arsenic in infectious diseases, and chiefly of salvarsan in syphilis. J. E. R. McDonagh believes that salvarsan is not truly parasitotropic, because it attacks only a certain formation contained in the spirochete by reason of an oxidizing action. Salvarsan is on the other hand organotropic and toxic and attacks especially some of the intracranial tissues. Much of McDonagh's reasoning is directed against Ehrlich's side-chain theory, which takes for granted that chemotherapy is parasitotropic therapy. On the other hand McDonagh may be correct in his belief that chemotherapy is a matter of oxidations and reductions. He has used non-toxic oxidizing compounds of sulphur of iron in an attempt to replace arsenic, but evidence of cure of obstinate syphilitic lesions by such drugs is not yet regarded as entirely conclusive. Dr. C. H. Browning has claimed that chemotherapy really began thirty years ago with the use of methylene blue, a sulphurated compound, in malaria. Mr. John Ward holds that a parasitotropic substance must be organotropic as well. Arsenic, which in certain combinations is the most powerful parasiticide, is also highly organotropic, hence toxic. Iron is neither parasitotropic nor organotropic, while sulphur, non-parasitotropic, is organotropic in that it is a stimulant to organic cells and tissues.

McDonagh first passed from toxic arsenic to its congener phosphorus, but finding this likewise too toxic, made experiments with a third metalloid, sulphur, which he incorporated into certain synthetics closely resembling in composition salvarsan. Intramine, one of these, has been used somewhat since the war began as a substitute for salvarsan, but is admittedly inferior to the latter save, it is alleged, in recurrences. McDonagh insists, however, that with it should be associated for best results a reducing principle, namely, colloidal iodine, to be introduced into a vein or muscle. McDonagh has also prepared a synthetic of the salvarsan type in which iron enters. He insists especially on the value of intramine in intracranial syphilis, which is often made worse by salvarsan; also in so-called neurorecidives, which salvarsan has been accused of causing.

PELVIC MASSAGE.

Writing in the *New York Medical Journal* of September 30, 1916, HERB asserts that the very fact that pelvic massage has won a permanent place in the treatment of diseases of women and is successfully practiced by many physicians is sufficient proof that the method itself is not at fault. Massage is, indeed, recognized and acknowledged as one of our best palliative or curative measures for the very same afflictions for which it is recommended in women, if such afflictions are at the surface of the body or where they are easily accessible. Here as well as there it is used to remove remnants of inflammatory conditions, to improve local circulation, or to free nerves, blood-vessels, or organs

embedded in or distorted and displaced by cicatricial tissues, and has proved equally satisfactory in both instances.

If the method is not at fault we must, of necessity, look to the physician for the cause of failure. With him, in fact, the trouble lies. It is due to the special requirements demanded of the operator. General massage requires comparatively little medical knowledge and skill and no special fitness, save physical strength and endurance. Pel-

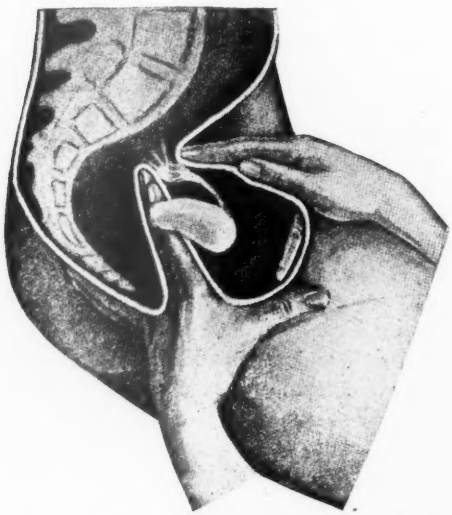

FIG. 1.—The fingers of the physician are sufficiently long to reach behind the ovary. In pressing the outer and inner fingers together, the ovary slips forward and the adhesions become accessible. They can now be stretched or broken, as the case may be, and the patient relieved.

vic massage, on the contrary, requires a high degree of knowledge and skill, but, above all, fingers sufficiently long to render the pelvic organs readily accessible to the masseur. It is this last-mentioned requirement which has not received the attention it deserves as an absolute prerequisite to success in pelvic massage.

Nothing is more obvious than that success in this important branch of the medical healing art must depend, first of all, on the ability of the physician to get freely to the organs from all sides. If he cannot thoroughly reach them, he certainly cannot successfully treat them. Let us assume that the doctor masters his anatomy, that he has sufficient experience and skill in examining women to enable him to outline clearly and definitely the pelvic organs and to make a good diagnosis, that he knows his pathology and the indications and contraindications of pelvic massage, and that he is fully competent to select the proper cases and to reject those not suitable for this kind of treatment. Such a doctor has all the qualifications to be or to become an excellent gynecologist, or gynecological surgeon, but he will not be successful in pelvic massage if the length of his fingers falls below a certain measure. For a better understanding Herb refers to figures 1 and 2.

There are many other conditions besides that illustrated with which short fingers are not able to cope. Every sixteenth of an inch more or less means just so much more or less toward success or failure in treating women by massage.

The varying length of the fingers of the different physicians will alone explain much of the perplexing difference of opinion ap-

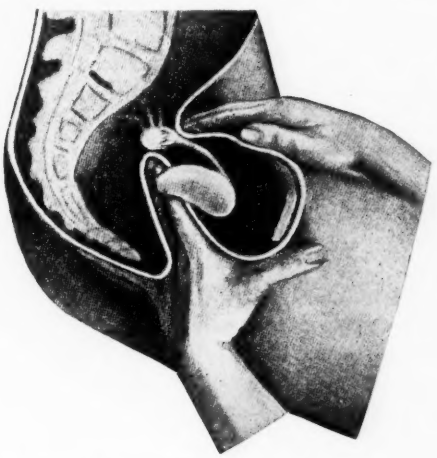

FIG. 2.—The fingers of the physician are not long enough to reach behind the ovary, though he may feel it and ascertain its site, size, contour, tenderness, and all other normal or abnormal conditions. In pressing the outer and inner fingers together the ovary slips backward and the adhesions become inaccessible. They cannot now be treated by massage, and the patient cannot be relieved, in spite of the fact that the physician may make a good diagnosis and knows well what should be done.

parent in the literature on pelvic massage. Other things being equal, the physician with long fingers will work easily, quickly, and without causing much pain. He is the one who succeeds and recommends massage. The physician with short fingers, however,

will work under stress and difficulties and cause much pain. He is the one who fails, loses his patients, and decries massage. An investigation of the comparative length of the fingers of those for and against massage will, Herb is convinced, fully bear out this statement. His personal observations have been most convincing. Of course, radical surgeons, who have never tried massage, and who give consideration to nothing but surgical methods in the treatment of women, are not included in this estimate.

To provide for some more definite figures as to the length of fingers necessary for pelvic massage, Herb may state that the available length of his own middle finger is three and fifteen-sixteenths inches. This is decidedly more than the average length, as confirmed by his personal observation. In spite of this decided advantage he has occasionally realized that still longer fingers would give him quicker and better results. Dr. Robert Ziegenspeck, of Munich, Germany, one of Europe's most ardent and successful advocates of pelvic massage, has fingers slightly longer than Herb's. He studied under Thure Brandt personally and had ample opportunity to observe the length of the fingers of his master. While Herb was assistant at this clinic he heard Ziegenspeck remark a number of times that his—that is, Ziegenspeck's—fingers were midgets compared to those of Thure Brandt. Many times since Herb wondered how much of Thure Brandt's extraordinary success was due to the extraordinary length of his fingers and how much to his undoubted genius.

These disclosures are of no small moment from a practical standpoint. There is a large percentage of gynecological cases that can be successfully treated in no other way than by massage. Herb refers here to women with postoperative pelvic adhesions, if a secondary operation is out of the question, and to those far more numerous women who are afflicted with chronic shrinking processes within the ligaments and their many distressing symptoms. Then there is a still larger percentage of cases for which pelvic massage constitutes not the only yet the best and most successful treatment. If we would do justice to these cases, we must train physicians in pelvic massage in postgraduate schools. But pelvic massage is not easy. To avoid disappointment to physician and public alike, it remains essential to select from the applicants for tuition only those who have the proper physical as well as scientific qualifications, as has been explained.

HAY-FEVER AND ITS TREATMENT.

In the *Medical Review of Reviews* for October, 1916, NEWCOMB says that as to medicinal treatment in hay-fever it may seem absurd to say that there is a radical form of treatment. Of course, when paroxysmal sneezing is brought about by pathological conditions, or when such conditions aggravate or are apt to induce attacks of the disease, the necessary operative procedures for relief are always in place. Watson Williams thinks there is no doubt that paroxysmal bronchial asthma may be set up by nasal affections and may be cured by the removal of the nasal diseases. But cases of this nature are rare. So far as radical treatment is concerned, Stein says that arguing on the assumption that we are dealing with a disorder in which the nerve tissue has been made hypersensitive to certain external exciting agents by a perverted internal disturbance, and that the fifth nerve in particular, on account of its colossal peripheral distribution, is unduly exposed to this external agent, the idea of interrupting service between this nerve and the sympathetic system presents itself as a most rational mode of procedure. Stein first effected this in 1907 by blocking the nerve with alcohol, and since that time has had good results by this method.

As a nose and throat specialist of considerable experience Newcomb wants to say that methods of treating hay-fever from the standpoint of his specialty have not been attended with very great success. As said before, when pathological conditions are present these should be treated by operation if necessary. Local treatment is

usually no more than palliative, although he has had a fair measure of success with adrenalin.

He takes it that hay-fever is mostly a neurosis—that is, that persons predisposed to it are of neurotic temperament. Treatment therefore should consist in all measures calculated to correct disturbed metabolism and in toning the nervous system. It is found by many that going away before the season for an attack usually accomplishes the desired object. Sea air is beneficial, and in any event a change of air is indicated; a change of scene, too, where the mischievous seeds and grasses which cause the complaint are absent. When the patient has to remain at home efforts should be put forth to protect the subject from the external irritating causes. Nevertheless, he must confess that judging from his experience the chief hope of eradicating hay-fever lies in preventive measures.

THE POSSIBILITY OF NOVOCAINE ADDICTION.

The *Boston Medical and Surgical Journal* of October 5, 1916, discusses this matter editorially as follows:

Whether or not the Harrison law will ultimately prove effectual in abolishing, or at least minimizing, the evils of addiction to drugs is dubious as yet. The intent of the law is good, but recent judicial decisions and interpretations have warned us that there are vulnerable places in it. Leaving out of the discussion for the moment opium and its derivatives, we have to consider cocaine, which would present an easier problem. In the first place there is not in the case of cocaine an addiction in the special sense we mean when we speak of morphine addiction. The devotees of the former drug get in the habit of taking the drug at intervals, these being regulated, in the lower class of users, by fluctuations of their personal finances, and in the higher class by circumstances of expediency. Following a cocaine debauch there is a true depression, but not the physiological craving for the drug which the opium habitué experiences. In the second place, cocaine has a more limited field in medicine than opium does, and it is not impossible that it may be replaced as a local anesthetic by other drugs, which do not possess among their properties the production of emotional exaltation.

Among the drugs which naturally occur to us in this connection is novocaine. This powerful anesthetic, like others of its class, ends in "caine," to indicate its physiological action as a local anesthetic, but is not chemically related to cocaine, being the hydrochloride of the organic base para-amino-benzoyl-diethylamino-ethane, a derivative of para-amino-benzoic acid, while cocaine is benzoyl methyl-ecgonine. It does not appear, from what scant information is available, that novocaine produces the psychic effects which cocaine does; however, a great deal more data must be obtained before any conclusion can be drawn as to this. If true it would seem that the substitution of novocaine for cocaine, wherever at all possible, would be indicated, so that the latter drug could be withdrawn from the market entirely. Before this is done the proper procedure would be to test out novocaine on a group of individuals of varying temperament, to see whether or not it ever produces emotional reactions of a pleasurable nature.

[There are, however, certain advantageous effects of cocaine not possessed by novocaine.—ED.]

ON THE VALUE OF ROENTGEN RAY EXAMINATION IN THE DIAGNOSIS OF CANCER OF THE STOMACH.

BAETJER and FRIEDENWALD (*Bulletin of the Johns Hopkins Hospital,* August, 1916) believe from their studies of many cases of cancer of the stomach that they are justified in drawing the following conclusions:

The Roentgen ray offers most valuable assistance as an aid in the diagnosis of gastric carcinoma; and this is especially true when the lesion is situated in the so-called silent area. It should not be relied upon alone in the diagnosis of early cases

without a strict consideration of the clinical aspect of the disease, but when taken in conjunction with the other signs it is of the greatest diagnostic value.

Indurated gastric ulcers give roentgenograms similar to those of carcinoma; but inasmuch as ulcers are frequently precursors of cancer, they may be grouped for practical purposes in the same class. It is often possible to determine their true nature only by microscopic examination of the excised area.

In the diagnosis of carcinoma of the stomach two conditions must be taken into consideration: first, the peristaltic waves of the stomach; and second, the morphological defect in the stomach.

In carcinoma of the cardiac area of the stomach there is usually a filling defect present, the activity of the stomach itself being normal, and, unless the lesion be very extensive, there is no interruption in the peristaltic waves. In lesions of the body of the stomach the peristaltic waves are interrupted in their course at the seat of the lesion, because the lesion itself is hard and indurated, and does not admit of further peristaltic movements. There is also present a persistent filling defect. In pyloric carcinoma there are usually signs of early obstruction in addition to a filling defect of small or large size, according to the extent of the growth.

In carcinoma, unless there be obstruction, there is always hypermotility with rapid evacuation of contents. In ulcer there is hypermotility with pylorospasm, and more or less retention of contents. In carcinoma the filling defect is generally surrounded by an invasive area, interfering with the motility, and producing a large dead area, whereas in ulcer the filling defect is much smaller, and is not so apt to interfere with the immediate peristaltic waves. The Roentgen ray furnishes us with important evidence regarding the operability or non-operability of the growth, pointing out, as it does, the location and extent of the growth, together with the degree of obstruction and the amount of involvement.

Negative findings are at times quite as important as positive ones, inasmuch as absence of the various *x*-ray signs of cancer affords presumptive evidence of the absence of this affection.

EPIPLOITIS FOLLOWING HERNIOTOMY.

HESSERT (*Surgery, Gynecology and Obstetrics,* September, 1916) notes that in the very acute cases the symptoms arise in a few days after operation, and consist of the usual signs of an acute infection within the abdomen, ending with general suppurative peritonitis. In rare instances the process may become localized with abscess formation.

By far the majority of the cases run a subacute or chronic course lasting for months or even years. The free interval after operation is generally of four to eight weeks' duration, but cases are on record in which two to three years elapsed before the onset of symptoms.

Pain is one of the first and most constant symptoms. It may at first be in any portion of the abdomen, depending on the location of the inflammation. Frequently it is in the upper abdomen, and is aggravated by deep breathing, coughing, or tight clothing. Associated with the pain there is usually a rise of temperature, with all its attending symptoms. There may be an absence of signs pointing to any special organ, and in some cases the symptoms all subside, and the patient gradually makes a spontaneous recovery. More often the disease is progressive, with finally all the signs of a localized abscess in the abdomen manifest. The pus in such cases may rupture into the bowel, or succeed in burrowing through the abdominal wall.

In the type of cases that develop slowly and insidiously, with vague and ill-defined symptoms, there is great resemblance to the clinical course of a cancer. The presence of a palpable mass is further suggestive of malignancy. In doubtful cases the abdomen has been opened, and even then the oper-

ator is in doubt whether the tumor is a carcinoma, sarcoma, or of inflammatory origin.

In every case of a herniotomy where abdominal symptoms supervene, the possibility of epiploitis must be considered. It is very likely that there have been many cases which have not been recognized or have been incorrectly interpreted, because epiploitis in this connection has received but little attention. Diagnosis is suggested by the occurrence of pain associated with the development of a mass in the abdomen. The tumor is usually on the same side as the herniotomy, on a level with or above the umbilicus. The tumor has been but rarely seen in the pelvis or inguinal region. It varies in size, but has been known to grow very large. It is tender on palpation, and is usually fixed to the abdominal wall, so that it does not move with respiration. There is usually dulness or flatness on percussion, as the intestines are beneath the mass.

In differential diagnosis one must consider cholecystitis, subacute appendicitis, chronic perforation of the stomach, foreign body (such as a gauze sponge) diverticulitis of the sigmoid, and pancreatitis.

According to Braun the development of an inflammatory tumor of the omentum after herniotomy does not necessarily demand operation, for a fair proportion of such cases recover under expectant treatment. It is fair to assume, however, that the diagnosis in some of the recovered cases might be open to some question.

The most radical view relative to treatment was expressed by Reynier, one of the early writers, who advised extirpation of the tumor as though it were malignant.

The practical lesson to be learned is that we should be familiar with epiploitis, as it may complicate recovery after a herniotomy, and adopt the measures necessary for prevention. These are in fact elementary, and include first a faultless operative technique, both aseptic and mechanical. There should, above all, be an avoidance of rough handling of tissues. Portions of the omentum should not be removed at all during the performance of a hernia operation unless there is a valid indication. If resection must be made, then absorbable suture material of as small a size as possible should be employed. The vessels in the omentum should be tied with many fine ligatures, and the use of *en masse* or figure-of-eight ligatures should not be considered. Section should always be made through healthy omental tissue, never allowing any diseased tissue to slip back into the abdominal cavity.

After the diagnosis of epiploitis has been made, the decision for operative interference rests with the judgment of the surgeon. The acuteness of the symptoms and the progress of the disease would be determining factors. Under ordinary conditions no harm can follow an exploratory incision. It is best to remove the inflammatory mass completely if possible. If owing to adhesions and abscess formation removal is impossible, then there should be thorough drainage.

In the event of intestinal obstruction caused by an old fibrous inflammatory mass, it may be necessary to resect or short-circuit the bowel.

THE TRANSPLANTATION OF THE ARTICULAR END OF BONE, INCLUDING THE EPIPHYSEAL CARTILAGE LINE.

HAAS (*Surgery, Gynecology and Obstetrics,* September, 1916) as the result of a carefully conducted and well reported series of laboratory studies finds that the epiphyseal cartilage line ceases to functionate after reimplantation and autotransplantation, either when transplanted by itself or with a small or a large piece of adjoining diaphyseal or epiphyseal bone, or even when transplanted as an entire intact bone. The longitudinal growth ceases in every case. The only evidence of regeneration is near the periphery beneath the perichondrium, which part seems to retain its property of producing cartilage. This new cartilage

possesses none of the length-producing functions of the normal epiphyseal cartilage line. The epiphyseal cartilage line is the least transplantable of any of the components of bone.

The articular cartilage undergoes practically no changes after reimplantation. In autotransplantation there occurs at times evidence of degenerative and regenerative changes. In some of the experiments of longer duration there is a partial substitution by fibrous tissue. The articular cartilage offers the greatest possibilities of successful transplantation of the various parts of a bone.

The vitality of the various components of bone after transplantation is directly related to the ability of that part to withstand the loss of its vascular supply. The less dependent the part is upon its blood supply the greater is the possibility of a successful transplantation, as in the articular cartilage; while, on the other hand, the more dependent the part is upon its vascular connections the less likely is the possibility of a successful transplantation, as in the epiphyseal cartilage line.

From these experiments and the results in general on transplanted bone the following conclusion is offered regarding the fate of bone after transplantation: Although each part of transplanted bone possesses the power to regenerate independently and without the aid of neighboring bone, this autonomous newly formed tissue does not possess that property which is necessary for a continued existence, and it will ultimately entirely disappear. Some additional stimulus is needed, and such conditions are only obtained when the transplant is in direct contact with normal growing bone. Therefore, when there is failure of such connection the transplanted bone at first shows evidence of regeneration, but if a sufficient time is allowed to elapse it will ultimately entirely disappear. However, if it is united with the cut surface of normal bone it will continue to live because certain necessary additional stimuli and new elements will be supplied by the host.

DISABILITIES OF THE KNEE-JOINT.

JONES (*British Medical Journal*, Aug. 5, 1916) gives a broad classification of these disabilities and derangements and the diagnostic signs, and indicates the appropriate lines of treatment.

There are three common conditions which are not always as clearly distinguished by practitioners as they might be. They are: (1) simple sprain of the lateral ligament, usually the internal; (2) slipping of the semilunar cartilage; and (3) nipping of the infrapatellar pad of fat. All these injuries may be produced by a twist or fall, which at first does not seem serious; all are associated with effusion of fluid in the joint; and in all the patient complains of more or less recurring disability after the lesion, unless it has been recognized and treated in the first instance.

Sprain of the internal lateral ligament is distinguished by definite pain and tenderness on pressure over the attachments of the internal lateral ligament; the patient himself localizes the pain of which he complains to the inner side of the knee; definite pain and tenderness are not found anywhere else about the knee, and the movement of eversion and external rotation of the leg stretches the injured ligament and retards recovery.

The treatment indicated, therefore, is firm strapping round the knee in order to steady it, and a raising of the inner side of the heel to divert body weight to the outer side of the foot, and thus relieve the ligament from tension. It is hardly necessary to say this treatment is preceded by rest in bed, usually with the aid of a straight posterior splint. This is the initial treatment, but neglect of the after-treatment just mentioned renders the patient liable to recurring injuries of the ligament.

If we remember the anatomical fact that the internal semilunar cartilage is closely connected round its convex margin with the deepest layers of the internal ligament and with the capsule of the knee-joint, we will understand why a severe twist of the knee, with the leg abducted, may rupture the liga-

ment and drag the semilunar cartilage with it, straining or tearing the attachments of the anterior horn. At this stage the inner side of the knee-joint is, so to speak, opened out, and everything depends upon what happens when it closes again as soon as the distorting force ceases to act.

If the cartilage is caught in displacement between the bones the knee "locks" in the manner familiar to us all. The cartilage may be split, fractured transversely, rolled up, or completely torn from its attachments. Sometimes the cartilage slips back into position without being crushed or caught between the bones; there is then no locking of the joint, but in every respect the etiology of the lesion is the same with the exception of the actual injury to the cartilage, and the patient generally states that he felt something "slip" or "click" in the knee, but could quite easily straighten it immediately after the accident.

The physical signs are tenderness on pressure over the internal lateral ligamentum patellæ just over the border of the tibia, a symptom always strongly suggestive of an injury about the attachment of the anterior end of the internal semilunar cartilage.

If the knee can be fully extended without causing pain, the aim should be to insure complete rest until the torn attachments have united. The knee should be kept absolutely straight on a back splint for at least ten days, the bandage being firmly applied over cotton-wool. After this the patient may begin to walk, and when he does so he should have a firm bandage over the knee to prevent effusion into it. Movements of the joint should be very limited the first day, and should gradually increase in range.

If the knee is carefully brought into use by graduated exercise, there should never be much effusion, and each day it should be less in amount; that is to say, there is no effusion in the morning, although by the end of the day it may have appeared, and each evening the amount is less than on the preceding one.

When these cases have been the victims of defective after-treatment, repeated stretching and effusion about the anterior end of the semilunar cartilage gives rise to a thickened cicatrix, which is tender, and can sometimes even be felt by the surgeon moving under his finger as the knee is flexed and extended. This painful spot is situated at the diagnostic point, already described, on the front of the knee, well to the inner side of the ligamentum patellæ. Sometimes this cicatricial thickening is so great that it is pinched between the bones when the knee is fully extended, and this causes sharp, well-localized pain and tenderness.

Treatment in such cases depends upon the exact condition, and two types must be distinguished:

1. In cases in which the cicatrix is not pinched, but merely gives rise to a sense of insecurity as if something is moving or "clicking" inside the joint, a rigorous course of strict rest, followed by massage and carefully graduated exercises, may cure the condition in a month.

2. In cases in which the cicatricial mass gets definitely nipped, the condition has become similar to the type of displaced semilunar cartilage usually described, and if rest and careful exercise fail an operation to remove the whole mass is indicated—the opportunity being taken to inspect the cartilage at the same time.

It has long been recognized that definite "locking" of the knee-joint is a characteristic sign of displacement of the internal semilunar cartilage, as described in text-books. This condition is a more severe variety of the injury just described; it differs from it in the fact that some portion of the cartilage is, for a time at least, caught between the bones and prevents full extension.

The treatment of this condition aims at the restoration of the power of extending the knee fully without pain.

If the displaced cartilage is fully reduced the knee can be fully extended, both actively and passively, without pain. If this cannot be done, the cartilage is not reduced. When the cartilage becomes disengaged the patient

is aware of it—in fact, he is the most competent judge of the success or failure of the manipulation.

First complete reduction is necessary. The patient should lie on his back with the thigh flexed on the body and the leg on the thigh. When in this position the surgeon can manipulate the leg, and can sometimes feel a fulness over the site of the displaced cartilage.

The patient is then told that he will be given the word "One, two, three; kick!" On the word "kick" the patient extends the limb as suddenly as he can. At the same time the surgeon rotates the foot inward and pulls, while pressure is placed upon the thigh. If the dislocated cartilage is reduced, the patient is almost certain to announce the fact, and the objective sign is that the knee can be completely extended without impediment. The knee, surrounded by wool, should be bandaged firmly, and fixed on a posterior knee splint. If the patient is not of a temperament likely to be helpful, an anesthetic is advisable. The patient should wear the splint for about ten days, but can usually be allowed up in his room at the end of five days. After ten days he may walk with the knee bandaged, taking care not to bend the knee suddenly. Active flexion of the joint should be practiced very gradually, and the quadriceps muscle should be massaged and exercised gently. If the progression is carefully made from gentle to stronger movements, the full range should be recovered without the recurrence of any effusion in the joint in about three weeks. The majority of these cases, carefully and efficiently treated in the first instance, do not give any further trouble.

Where a successful reduction is not accomplished, and in consequence the patient is not able to extend the knee fully, an operation will probably be required.

A word of warning may here be given about cases in which reduction is apparently complete, and the patient can get about with tolerable comfort, but complains that the knee-joint does not feel quite secure, although there is no evidence of the intrusion of any structure between the bones. These symptoms are often due to some minute adhesion within the joint which does not produce sufficient limitation of movement to be detected by the surgeon, but leaves the patient with the sense that he cannot use the joint without a feeling of restraint. Full movement of the joint, particularly in rotation, under gas anesthesia, will often remove these symptoms, although the surgeon cannot always feel any definite adhesion give way during the manipulation.

Operations on cartilages, even at base hospitals at the front, should be discouraged. It is not a practice which can be recommended, as the environment is a source of danger, no matter how experienced the surgeon.

The leg is placed to hang over the end of a table at right angles to the thigh; the knee is wrapped in sterile gauze, soaked in biniodide solution; the incision is made through the gauze, and the edges of the gauze clipped over the skin edges to the superficial fascia. As the knife with which the skin is cut may become infected by staphylococcus albus, a second clean knife should be used for all the deeper dissections. The incision need not be more than an inch or an inch and a half in length; it is made over the anterior end of the cartilage, sloping very slightly downward and inward—that is, nearly but not quite parallel to the upper edge of the tibia. Great care should be taken never to allow the incision to extend far enough to the inner side to cut any fibers of the internal lateral ligament; this is a fault which leads to weakness of the knee lasting for months or years, and is, unfortunately, still frequently to be met with in cases which have been operated on by the old large J-shaped incision described in text-books. The joint being opened, a blunt hook can be slipped under the free margin of the cartilage, and by picking it up it can easily be seen whether the front part is intact or torn, or has tags or projections, producing disability. In removing the whole cartilage great care should be taken

that no tags of cartilage are left projecting from the attachment to the conorary ligament, as these frequently give rise to continued symptoms, due to nipping or adhesions, and may necessitate a second operation. It is not until the stitching is complete and pads placed over the wound that the knee is straightened. Dressings are then applied, elastic pressure put on by bandaging over large pads of wool, and a simple posterior knee splint affixed to keep the knee straight. If the operation is performed with a tourniquet around the thigh—and this is advisable—no vessels need be tied; and if the elastic pressure is applied before the tourniquet is removed there need be no fear of bleeding into the joint.

Cases are met with in which the patient suffers from abnormal mobility of the knee-joint, clearly indicating that one or both of the crucial ligaments have been ruptured or stretched. Bearing in mind the mechanism of the crucial ligaments, it is not difficult to make a diagnosis.

The anterior crucial ligament is tense when the knee is fully extended, and prevents the tibia from being displaced forward on the femur.

The posterior crucial ligament is tense in complete flexion, and prevents the tibia from being displaced backward on the femur.

Both ligaments check inward rotation of the tibia. Hence, if the tibia cannot be displaced forward in the extended position, it may be assumed that the anterior crucial ligament is not completely torn; and if the tibia cannot be displaced backward in full flexion, the posterior crucial ligament is presumably not ruptured. Abnormal mobility indicates elongation or rupture of the corresponding ligament. The history of an injury helps the surgeon to exclude cases in which prolonged distention of the joint with fluid has caused elongation of all the ligaments, as well as the conditions associated with diseases such as Charcot's disease or locomotor ataxia. The treatment, when any such condition is diagnosed, is prolonged rest with the knee in extension, or fixed in plaster, or a Thomas caliper splint, in which the patient can walk, the object being to keep the joint immobilized for a time long enough to allow union of the torn ligaments or adaptive shortening of stretched tissue. The operation of stitching the ligaments is absolutely futile as a mechanical procedure. Natural cicatricial tissue, allowed to mature without being stretched, is the only reliable means of repair.

Almost any injury of the knee which is associated with increased vascularity or bruising may give rise to swelling of the pad of fat situated behind the patellar ligament. Consequently this fat is liable to be nipped in full extension of the knee. In ordinary civil life this forms one of the varieties of the initial stage of a local monarticular rheumatoid arthritis. The condition, however, is in no sense rheumatic. The patient complains of pain and tenderness in the knee after walking, and especially when going up and down stairs, or when getting up suddenly from a chair after sitting for any length of time. The condition is maintained by the repeated small injuries which occur every time the knee is fully extended. The treatment, therefore, is obviously to prevent the patient from inflicting small bruises on the tender fat and its covering of synovial membrane. This can easily be done by putting a cork pad, half an inch thick, inside the boot under the heel, to prevent the complete extension of the knee during walking, and by fitting the knee with a cage support, which allows full flexion but limits extension by about 30 degrees. Wearing this boot and cage splint the patient cannot fully extend the joint, and in this way bruise the post-patellar fat. The swelling gradually disappears, and after a few weeks full extension can be performed without pain. The diagnosis of this condition is easy. The patient complains of pain in the knee or, more often, in the front of the knee, not at the inner side. Passive extension of the knee by the surgeon produces the pain, which is definitely localized just below and behind the patella.

On palpation the thickening of the pad of fat may be felt; it is enlarged and tender, but there is no sensitiveness over the internal cartilage or the internal lateral ligament. In some instances the retropatellar pad of fat may be bruised in common with injury to the semilunar cartilage. The tender point of the internal lateral ligament, the cartilage, and fatty pad will be found in such a case.

In all the injuries of the knee which Jones has been discussing wasting and weakening of the quadriceps muscle is a characteristic feature, and no treatment can be regarded as sufficient which does not provide for the restoration of the efficiency of this muscle during the stage of convalescence. This is particularly to be noted in the condition which is now under discussion, for some of the deep short fibers of the subcrureus muscle are inserted into the synovial membrane and help to pull the pad of fat out of danger when the knee is extended. Neglect, therefore, of the quadriceps muscle will leave the patient peculiarly liable to a recurrence of the injury.

FECAL FISTULA.

CRILE (*Cleveland Medical Journal*, August, 1916) observes that most fortuitous or accidental fistulæ result from disease or from operations performed with inadequate facilities, such as appendectomy in an acute case, or salpingectomy. In acute appendicitis, for example, a fecal fistula may be caused by the surgeon or may result from the disease—but its occurrence may always be prevented. A not uncommon occurrence is the formation of a fistula by the sloughing away of a completely gangrenous cecum, or if the cecum is severely damaged the surgeon may complete its destruction. For this reason in cases of acute gangrenous appendicitis it is of prime importance to approach the perforated or gangrenous appendix with the utmost caution. The cecum should not be separated from its adhesions; the appendix should not be invaginated; and no drain or gauze should on any account be permitted to come into contact with the cecum, whose integrity is threatened by infection. If a fistula appears during the acute stages of the infection, let it alone—do nothing, for nature will close it if given a chance. Infection may cause a fistula, but the surgeon will only perpetuate it by trying to remedy it while the infection is acute. By his would-be helpful efforts the surgeon may hinder the closure of the cecum until its mucous membrane grows out and meets the skin, for the insertion of a drainage tube as far as the fistulous opening produces an avenue for granulation along which the mucous membrane of the intestine grows rapidly until it reaches the skin—and a fecal fistula is the result. A fistula in any other part of the intestine may be produced in the same way.

However produced, immediately after its inception any fecal fistula may be healed in the simplest possible manner, viz., by placing neither gauze nor drainage tube in contact with the intestine. In his experience spontaneous closure has invariably followed this method of treatment. It is possible to thus dispose of drainage only if at the operation adhesions have not been broken up and only a simple opening made.

Cecal fistulæ may be cured with certainty by one of two methods of operation. Bismuth *x*-ray pictures disclose approximately the depth of the fistula or fistulæ, and show the branches if any exist. If the fistula be single and shallow, without branches, the operation may be performed after the method of Coffey. A probe is inserted for guidance. The tract and the wall of scarred and infected tissue is gradually isolated by a cautious dissection. The dissection is done within an ample incision which extends down toward the bowel at the border of the normal tissue of the original wound. The scar and the fistula are thus isolated together until the surface of the bowel is reached. The bowel is then most cautiously separated by sharp bloodless dissection up to the fistula, which is attached like an umbilicus to the cecum.

If the cecal wall be sufficiently thin and elastic the division of the fistula is similar

to an appendecotmy—that is, the fistula is tied near the cecum with catgut, is divided, and the stump is invaginated. If omentum is at hand, as it usually is, it is patched over all.

These operations for single unbranched fistulæ are the easiest. A more complicated operation is required where there are branching sinuses; when the fistula, though single, is long and tortuous; and when the opening is so large as to receive a large portion of the bowel contents. In these cases the fistula is firmly covered by a pad of gauze held down by adhesive plaster. The fistulous territory is separated from the proposed abdominal incision by a towel which is sutured to the skin. An ample abdominal incision is made internal to the fistula and the adherent intestinal coils are separated by sharp dissection until the site of the fistula is located. A lateral intestinal anastomosis is made at a safe distance from the fistula, and if conditions are favorable the distal coils are plicated to prevent further fecal discharge. The wound is closed in the usual way, the piece of gauze and adhesive plaster over the fistulous opening being left in place as long as possible. By this means primary union is usually secured. The isolated coil of intestine containing the fistula shrinks from disuse and usually the fistula closes spontaneously; if not, its closure may be effected by the deep destruction of the mucous membrane.

Some sigmoid fistulæ are so deep in the pelvis and have such large lamina and such thick walls that neither invagination nor direct suture can succeed. In such cases, if the isolation of the fistula by anastomosis was impossible, the writer divided the bowel, completely resected the fistula, and then either (*a*) made an end-to-end suture by means of the efficient cobbler stitch, or (*b*) closed the ends by invagination and made a side-to-side anastomosis. In the latter case he stitched the invaginated end to the adjacent bowel to prevent obstruction of the stoma by further invagination. Omental wrapping is employed whenever possible. A cigarette drain is placed carefully away from the field of operation. In an extremely difficult case of sigmoid fistula a temporary fistula of the cecum was made.

In a recent case of a rectal fistula of many years' standing discharging just above the pubes, in which at exploration the pelvis proved to be an impenetrable mass, he made a long incision down to the depth of the fistula. The incision was left wide open and treated with exposure to electric light and hypochlorous acid; later when sterile the edges were approximated with adhesive straps—apparently successfully.

Nitrous-oxide-oxygen anesthesia and anociassociation are employed in these operations and are of great advantage, as they eliminate shock, and minimize vomiting and impairment of immunity. If the hazard is great, glucose and sodium bicarbonate are given before and opium after the operation. Water is given freely, and sleep and rest secured by every possible means.

OS CALCIS FRACTURE.

COTTON (*Annals of Surgery*, October, 1916) points out that these lesions are not clean-cut breaks, but are of a crushing, spreading character. The whole bone is mashed down. The patient lands on his heel and crushes the bone. The bone is decreased in vertical depth and increased in lateral diameter, which is much more important, due to bulging outward under the external malleolus. The outer plate of the bone is more compact than the rest and carries with it the peroneal tubercle and the peroneal tendon sheath. This is such a constant feature that Cotton always expects it and has always, save in two cases, found unmistakable bony thickening at this point, and this in itself is diagnostic. It has one other nearly constant factor, the interference of the joint between the astragalus and calcis, particularly with the posterior calcaneoastragaloid joint. It may be directly involved or may simply have its range of sliding motion shortened, or its alignment thrown out by the displacement of fragments, without the joint being broken open. Either of these injuries causes it to go out

of commission as an effective mechanism. This is important, since it is almost purely between astragalus and calcis that the movements we call pronation and supination occur.

In these fractures, therefore, we nearly always find lateral motion gone, and up-and-down motion preserved. The nearly constant features are pushing up of the heel, broadening of the bone, mainly outward, and interference with the lateral mobility. Of about 14 cases recently referred to Cotton, none was fit to work when seen, and but three looked promising.

Henderson collected for Cotton cases treated at the State Hospital for the last four years. There were seven treated only by manipulation and plaster or not at all. They all limped and had painful feet. There were 12 cases treated, with very much better results. Study of 144 cases with real data on 55 shows that results without more treatment than the traditional plaster are appallingly bad.

With some pains taken (some attempt at reduction) the results are better; sometimes even excellent. The method of treatment advocated by Cotton is as follows:

Loosen up the fracture by manipulation.

Pull the heel down. Cotton used to put a sound through from side to in front of the heel-cord, and pull down; latterly he has used ice-tongs as easier to handle and affording a better grip.

Free the joint motion between astragalus and calcis.

Push in the displaced bone under the external malleolus; this narrows and shapes the whole bone. It is done by slowly striking with a big mallet on the outer side of the foot, padding with felt to take the blow, and supporting the inner side of the foot on a sand-bag. This impacts, and, owing to the fact that the outer plate is firm, the impaction is usually fairly solid.

The foot is put up in plaster, not at a right angle, but with the heel-cord slack; also avoid direct pressure on the heel.

It is well after the impaction to test again as to the presence of lateral motion. If the impaction has impaired it, work the joints loose again and reimpact. This is rarely needed, however.

Cotton states he has done this impaction many times; he has never failed to get improved position, has usually succeeded in entirely abolishing the abnormal prominence below the external malleolus, and in restoring the lateral motion and in getting a serviceable impaction.

A SIMPLE APPARATUS FOR THE TREATMENT OF INCIPIENT HIP-JOINT DISEASE.

SPEER (*American Journal of Surgery*, September, 1916) states that in the incipient cases of joint disease the treatment resolves itself into two phases: first, extension; second, fixation. The apparatus by which he accomplishes this he thus describes:

It consists of two parts, one for night and the other for day use. That for night use is of the ordinary knee extension apparatus, for use in bed. It consists of a boot formed of plaster or any other material that can be fitted to the foot and leg, as far as the knee, ending in a ball, and split so that it may be taken off and put on as needed. To this is attached a cord, pulley, and a weight sufficient to relieve the child from pain and the usual night cries during the time it should be asleep.

For the day apparatus are required an ordinary well-fitting pair of shoes. On the bottom of the shoe for the foot of the well leg is built a cork extension of from one to three inches according to the size of the patient; on the shoe of the foot of the diseased leg the heel is removed, and there is substituted a heel of lead, as heavy as the patient can comfortably carry. Added to these is a pair of well-fitting crutches. In a night or two, if the weights are properly adjusted, the night apparatus will be found to give the patient perfect comfort and sleep. In the morning this apparatus is removed, the child is dressed as usual, and is turned out in the air to take exercise and to play with other children, except that he is expected to use his crutches and to keep the foot of the lame leg off the ground.

The objection will immediately be brought forward that while this apparatus performs extension, there is nothing between the foot and the support of the shoulders to keep the hip immobilized. However, one should remember that the line of extension is directly through the hip from the shoulder downward, and in order to steady the heavy weight the muscles of extension, abduction, and even circumflexion are exactly balanced. It will be seen that through the muscles being made to work in exact opposition we have an apparatus that immobilizes the hip even more securely than the so frequently used Thomas splint and its modification.

THE CLINICAL POSSIBILITIES OF THE PHARYNGEAL PITUITARY.

BRYANT (*Medical Record*, Sept. 9, 1916) writes this paper to show that the hypophysis system may be affected clinically through that portion of it lying in the nasopharynx, the pharyngeal pituitary, and that the results of clinical treatments of the pharyngeal pituitary are similar to those obtained, in like conditions, by hypophysis medication.

The pharyngeal pituitary is a part of the hypophysis system. It represents the lowermost extremity of Rathke's pouch, the hypophysial pedicle of the embryo, which, failing to emigrate through the cranium, has not disappeared through retrogression, but has become organized, in man, into a true glandular body in the pharynx. The phylogenetic history of the hypophysis system shows that in the lowest vertebrates the glandular lobe—itself a portion of the primitive pharynx—is in open communication with the pharynx; this communication is usually lost in the ascending scale, by the chondrification of the base of the skull, but remnants of hypophysis tissue remain along the route traveled by the embryonic hypophysis from the ectodermic anlage to the brain. In mammals several hypophysis remnants or accessory hypophyses have been found in rabbits and cats (Arai) and in dogs. In man the accessory hypophyseal tissue takes the form of the hypophysis of the pharynx. Consequently, in contrast to the cerebral hypophysis which lies inaccessible in the sella turcica, protected by the sphenoid bone, this accessory hypophysis tissue lies exposed at the pharyngeal angle, the most unprotected spot in the pharynx. It is located underlying Luschka's tonsil, and it may be found anywhere within the extreme boundaries—the mucous membrane in the middle line, the posterior margin of the vomer, and the base of the sphenoid.

The pharyngeal hypophysis is known to be present in the fetus and in individuals of all ages up to seventy-six years. In a fetus of 18 mm. it measured 1½ mm. in length (Erdheim); in the adult its average length appears to be about 5 mm. The shortest length given in the literature is 1½ mm. (fetus); the longest, 7 mm.; the least width, ¼ mm.; the greatest, 3 mm.; the least thickness, 1/5 mm.; the greatest, 1½ mm. These measurements are given here regardless of age. The size of the pharyngeal pituitary has been urged against the possibility of its functional importance. When, however, we consider the average dimensions of the cerebral pituitary (15 mm. in the transverse direction, 8 mm. in the anteroposterior, and 6 mm. in the vertical), in relation to its vital importance in the general economy, it is seen that the size of the accessory pituitary can be no argument against its activity.

According to Citelli, numerous capillaries and small veins are found both within and around the pharyngeal hypophysis; these vessels anastomose with the veins of the pharyngeal mucosa and the submucous tissue as well as with the veins of the periosteum of the lower sphenoid surface and the bone.

The function of the pharyngeal pituitary is probably auxiliary to that of the cerebral pituitary. Citelli has found indirect circulatory connections between the pharyngeal hypophysis and the cerebral hypophysis, through a venous plexus in the sphenoid body. There is also probably some nervous connection between them, and it is possible that there may be mutual secretory and stimulative activity between them. The

pharyngeal pituitary is the representative of the cerebral pituitary, located, like the lymphoid tissue, in the most vulnerable part of the body, because the exposure of this portion needed the strongest defense mechanism the body is capable of, which is the pituitary system.

The clinical relation of adenotomy to the hypophysis system is revealed in cases of "adenoids"; adenotomy, an operation which impinges upon the periphery of the hypophysis system, relieves the pharyngeal pituitary, together with the lymphoid tissue, as is shown by the reaction of the hypophysis system in form of more rapid growth and improved nutrition after this operation. (It seems hardly necessary to state that the pituitary system is known to be of essential importance for the normal course of the processes of growth.) Furthermore, adenotomy relieves a psychic symptom-complex pathognomonic for hypophysial lesions, which is associated with "adenoids" and affections of the nasal passages; this complex comprises loss of memory, partial or complete; aprosexia, mental and emotional sluggishness, and morbid drowsiness and somnolence. The frequent remarkable psychic change after adenotomy is a matter of common knowledge. It is interesting that Citelli states that this symptom-complex can be removed through operative or local treatment of the primary disease, alone; or it can also be removed through general hypophysial treatment without local measures; a certain and permanent recovery is insured through the combination of these two methods of treatment.

For nearly thirty years the author has been using this stimulation empirically in hypertrophic conditions of the lymphoid tissue and the mucous membrane of the rhinopharynx with hypertrophic ear conditions, instead of adenotomy; in conditions of the mucous membrane where hypertrophy and atrophy in various combinations are associated with atrophic catarrh; in atrophic conditions of the rhinopharynx associated with hypertrophic conditions of the middle ear; in otosclerosis; in tonsillitis; in cases of articular synovitis.

The effects of these applications are immediate: after one application there occurs an equalization of the circulation, shown by improved color of the face; a red face loses color and a pale one becomes rosy; the blood tension is likewise equalized; when abnormally high, a reduction generally follows; similarly the pulse is brought from either extreme closer to the normal. Repeated applications are followed by a consciousness of euphoria; an objective general physical improvement. A tonic effect is characteristic. The most striking of these general effects is the regulation of the blood-pressure, so that it tends always to approach the normal.

Compare, for instance, both the general and the local effects of the chemical stimulation of the pharyngeal pituitary as given above with those obtained by Whitbeck: "Rheumatic Arthritis Treated by the Extract of Pituitary Body." In his series of cases the regulation of the blood-pressure, from high to normal and from low to normal, is strikingly similar to that obtained by chemical stimulations of the pharyngeal pituitary; likewise, the results in the regulation of pulse and circulation are similar, as are also the local results of relief from pain and alleviation of joint symptoms.

It seems possible to say, on the foregoing evidence, that intervention in the region of the nasopharynx, whether it takes the form of adenotomy (or of scraping, splitting, finger manipulation, or forcible application to the adenoid) or of chemical application through the nose to the region of the pharyngeal tonsil, affects the hypophysis system through the pharyngeal pituitary. After adenotomy and chemical stimulation of the pharyngeal tonsil, the results in rapid growth and improved nutrition, in relief from aprosexia and morbid somnolence, etc., in freeing the system of infection and local relief of pain, in the regulation of blood-pressure, of pulse, of circulation, and of temperature, all speak for themselves as to the involvement of the cerebral pituitary in the renewed activity of the pharyngeal pituitary. Consequently, it is possible in depressed states of the pituitary system to

supply pituitary activity in either of two ways—the first, by clinical treatment of the pharyngeal pituitary through intervention in the nasopharynx; the second, by supplying pituitary substance to the system. It is very likely possible to combine advantageously the clinical and the therapeutic modes of treatment.

THE INTERPRETATION OF FUNCTIONAL RENAL TESTS.

BEER (*Annals of Surgery*, October, 1916) observes that the practical value of these tests becomes more and more evident as one succeeds in interpreting the effects elicited.

Why a given kidney (*e.g.*, a case of ureter stone) secretes more urea than its mate, but fails to excrete indigo-carmine while its mate does it normally, or why a patient dies of uremia while the phthalein output is normal or almost normal, illustrate some of the perplexities that one encounters. As the above are exceptional occurrences the important practical point in all this work is to arrive at an understanding of the significance of zero or minimal excretions, so that we may be guided intelligently and thus get the best possible operative results.

Fortunately positive results—*i.e.*, good excretion of test substances—usually mean good function. Occasionally hyperfunction, however, may accompany severe disease and be very misleading. In 1908, in a paper referring to the influence exerted by a diseased kidney on the excretory work of the second organ, Beer called attention to this difficulty. Since then Baetger has emphasized this in his presentation of cases of hyperpermeability, and Ellis Foster in his series of cases dying of uremia with high phthalein output.

Beer groups his cases as follows:

In the first group is a series of cases in which there was minimal excretion of test substances, etc., due to symmetrical renal disease usually caused by obstruction—*e.g.*, adenoma of the prostate, stricture of the urethra, interstitial cystitis, etc.—and in which preliminary treatment failed to improve renal output and a fatal ending ensued (or threatened), due to renal insufficiency.

In the second group similar cases in which preliminary therapy succeeded in restoring function and in which operation could be successfully performed.

In the third group cases in which the lowered output was due to inhibition, toxic or reflex, and on the basis of this interpretation operation (successful) was permissible.

In the fourth group cases of more or less symmetrical renal involvement in which the kidney or kidneys had to be directly attacked before any improvement in renal function was to be expected. Success in this group of minimal excretion cases depended on rapidity of operation, substitution of gas and oxygen anesthesia (or spinal or local) for ether, and adequate drainage so as to avoid wound infection.

He concludes as follows:

1. Extrinsic causes (usually obstructive in character) may lead to permanent symmetrical renal damage, evidenced by minimal or zero excretion of phthalein and indigo-carmine associated usually with high blood urea and high incoagulable nitrogen blood content. Operation in these cases will be of no permanent benefit, and even the slightest (in one case the passing of a cystoscope) may bring on a fatal uremia.

2. Similar extrinsic causes may lead to temporary renal damage evidenced by the same phenomena as under 1. Operation in these cases, particularly after adequate preliminary treatment, will be rarely followed by uremia.

These two wholly different types of cases can be differentiated by removal of the usual causative factor—*i.e.*, relief of the obstruction, either by use of indwelling catheter or regular catheterization, or by preliminary cystoscopy under local anesthesia or gas. If the case is of the type under 1, no marked change in the renal output will result, whereas if the case is of the type under 2, the renal output will regularly improve.

A similar low combined output may be caused reflexly (inhibitive or toxic) by more or less extensive disease of one kidney, while the other kidney is adequate and improves in its function after removal of its diseased mate, or after relief of the pathological condition in its mate.

A low combined output may also be due to bilateral intrinsic causes, and improvement in these cases is possible only after operative attack on the kidneys, or the kidney, if single, under an anesthetic which has no injurious effect on the diseased kidney parenchyma; and provided no severe wound infection or other septic complications which overtax this parenchyma develop.

THE RELATION OF ARTERIOSCLEROSIS AND OTHER ANATOMICAL CHANGES OF OLD AGE TO THE DEVELOPMENT OF EPITHELIAL MALIGNANCY.

WARNER (*Surgery, Gynecology and Obstetrics*, October, 1916) has not found the various old-age conditions of endarteritis, acellular connective tissue, or fibrosis, to have been present in all cases of cancer examined.

In the study of the various abnormal conditions present in a series of non-malignant uteri, sclerosed vessels were found without carcinoma.

Many uteri, with normal vessels, showed the presence of cancer-cell infiltration.

Many cancerous uteri had only normal connective tissue, consequently without fibrosis.

Inasmuch as so many of the non-cancerous uteri showed the so-called old-age conditions, one would expect to find cancer in them more frequently, if they are a positive factor in the development of cancer.

The same may be said of the ovary, where it is quite common to find sclerotic changes in the vessels and fibrosis in the stroma without the patient having developed cancer.

Certain precancerous conditions do not necessariiy develop into cancer. This is notably true in smokers' burns, some of which heal, though simulating cancer. The epithelium in these cases simply piles up without infiltrating the tissue beneath.

Lymphocytic infiltration, even when present, varied greatly in amount. This was true not alone of the cancers but also of the various tissues used as controls, in some cases being very pronounced, in others quite slight in amount. It was especially marked in the rapidly growing carcinomata.

Of the 206 cases of carcinoma of all organs and regions examined, 105 showed arterial obstructive changes. This gives us substantially an equal division between endarteritis, 50.96 per cent, and normal vessels.

Fibrotic changes were present in 118 cases, 57 per cent.

Lymphocytic infiltration was present in 85 cases, 41 per cent.

That endarteritis and the anatomical changes of old age cannot be looked upon as a constant factor in the production of cancer is shown by the fact that normal vessels were present in almost half the cases.

The same holds true of fibrosis or even acellular connective tissue without fibrosis.

Lymphocytic infiltration, while present in less than half of the cases, plays a rôle that is protective rather than etiological.

Certain biochemical factors of a local or internal and general type are probably responsible for some cases of cancer.

THE SIGNIFICANCE OF SYPHILIS IN OBSTETRICS.

FULLERTON (*American Journal of Obstetrics*, July, 1916) observes that when a woman acquires syphilis during pregnancy, the initial genital lesion, because of the increased vascularity, is usually larger, more moist, softer, and more persistent, often lasting for twelve weeks. Although the so-called secondary manifestations are frequently scarcely noticeable, they may develop earlier, and be more pronounced than usual, the papules being larger, and the pustular forms being more common at this time. The secondaries on the vulva are the most pronounced; they are larger, more

persistent, and prone to ulcerate. The constitutional symptoms are more pronounced; the glandular enlargement is more marked; fever is more common and slightly higher; and anemia and digestive disturbances of a more severe degree are met with. Unexplained neuralgias are common.

Without question syphilis is the most common disease met with during pregnancy. The frequency of its occurrence is difficult to estimate from the meager statistics on the subject, but from a study of 10,000 consecutive cases, Williams shows its presence in over 3.5 per cent between the seventh and tenth month, and this figure would probably be increased to 5 per cent if earlier and later cases were taken into consideration.

Mall, Pearson and others estimate that for every 1000 live-born children there are 500 to 600 still-births; that is, products of gestation expelled between the time of conception and the period of viability (seventh month), or at a later period if born dead. (These figures include very few, if any, induced abortions.)

Syphilis is a common cause of sterility in either the male or the female, Nonne's material showing a 10-per-cent sterility in syphilitic unions; where the graver lesions, as paresis, are present, Haskell has reported a 45-per-cent sterility.

In eighteen syphilitic families Fournier counted 151 pregnancies, of which 85 per cent ended in still-births.

The nearer the time of conception the woman acquires her lues the more certain is her child to be syphilitic and either aborted, born prematurely or at term with evidence of the disease. Even though the mother acquire her infection in the last month of pregnancy, according to Finger, her child acquires the disease before birth in over half the cases. In Fournier's private practice, 44 pregnancies in as many women affected with recent syphilis resulted in 43 fetal deaths. He also states that 90 women infected by their husbands became pregnant in the first year of married life, which he terms *l'année terrible* from the view-point of heredity. Of these, 50 pregnancies terminated by abortion or still-born infants, 38 in the birth of children which soon died, and two in the birth of children which survived.

Instances are seen which would tend to show the admissibility of Profeta's law, which states that a syphilitic woman may bear a non-syphilitic child. We have no absolute proof that these children are not infected, but when we are not able to discover in them any signs of the disease, and after years of observation no latent evidences are observed, we conclude that they were not infected before birth. Such cases, however, are comparatively rare and limited to instances where maternal infection was acquired years previous to conception, or else very late in pregnancy, though in the latter instance Finger has shown that over half the children are infected before birth. If the child becomes infected during the last few weeks before birth there may be no clinical manifestations of the disease and the Wassermann will usually be negative, as the time has been too short for either to develop; both, however, will develop at a later period.

Syphilis, unrecognized in the male or female of the second generation, may be conveyed in a marked form to the third generation.

The wives of 50 per cent of paretics were found by Haskell to be syphilitic, and in them the disease usually existed as unrecognized latent lues.

If the father be in the primary or secondary stage of the disease, the wife is almost invariably infected, with the consequences stated above.

The greater the period of time between paternal infection and marriage, the less likely is the husband to infect his wife. Even though the husband is markedly luetic he may not immediately infect his wife or beget a syphilitic offspring.

Raven, Boas, and Müller have all pointed out that very often new-born syphilitic children give negative Wassermann reactions which later usually become positive. A possible explanation of this fact is that immunizing bodies are not transmitted

through the placenta from mother to fetus, neither are such bodies formed by the fetus until about the eighth month. Roux insists that this fact should be borne in mind and not lead one to err in making a diagnosis. The percentage of positive reactions increases with the age, and the blood should not be taken before the tenth day.

The large majority of syphilitic infants die in early childhood. Luetic individuals may not show evidences of the disease until it is exhibited as late congenital syphilis, which may be first recognized as late as twenty-eight or forty years, according to Fournier and Oppenheim respectively, the maximum number of cases being at ten to fifteen years.

Among the more common evidences of late congenital lues the author mentions interstitial keratitis, epilepsy, idiocy, and imbecility (17 to 60 per cent, as given by different authors), chorea, cardiovascular disease; skeletal deformities, as "saber legs," "scaphoid scapula," and "saddle nose," osteomyelitis, nephritis, perforation of the nasal septum or soft palate, gummata, Hutchinson's teeth, psychopathic disorders, etc.

Syphilis produces many characteristic, if not pathognomonic, changes in the placenta, which however may vary in degree, so that although a diagnosis may usually be made without difficulty, occasional cases are met with which are of a border-line type and require the clinical history to aid in the diagnosis.

In the more characteristic cases the placenta is increased in size for the duration of pregnancy; its normal ratio of one-sixth to one-eighth the weight of the child may be increased to one-fourth or more. The placenta is pale, fatty, edematous, and of a yellowish tinge, and if the child be macerated is dull and greasy in appearance. Pronounced infarction is a common finding. As observed by Frankel in 1873, fresh specimens teased in saline solution show marked changes of the chorionic villi, which exhibit a decreased arborescence; they are thickened and irregular in size, the ends of many villi showing a distinct clubbing, and their vascularity is markedly decreased. In section, besides the above-mentioned changes, there is seen an increase in the density of the stroma, the cells of which have lost their stellate appearance, are more closely packed, are oval or rounded in outline and resemble connective-tissue cells. The blood-vessels are greatly decreased in caliber by an obliterative endarteritis and an increase in the density of the stroma. This latter change is often seen in the umbilical vessels, and in both locations is of great importance in the production of the extensive placental infarction so commonly seen, which in turn, at least in part, by diminishing the blood supply, accounts for the poor development and frequent death of the fetus with premature expulsion.

With proper technique, spirochetæ are not difficult of demonstration in the placenta. As shown by the work of Wallich and Levaditi, Schultz, and others, they are always present if the child is syphilitic and should always be sought for if there is any question of diagnosis.

How soon after infection may a syphilitic marry with reasonable assurance of healthy offspring? Such a question is of vital importance and extremely difficult of a general answer. However, the dictum of pre-Wassermann days, that after five years of the disease, during the first three of which he had taken treatment, and during the last two of which he had had no treatment, and shown no signs of the disease, has proved to Keys and many other observers to be quite dependable. Although the Wassermann is less often positive after such a course, it is nevertheless frequently persistent, indicating the presence of active spirochetæ in the body but not their infectiousness. Therefore a persistent Wassermann is not a contraindication to marriage if the above requirements have been fulfilled.

Salvarsan is more particularly useful in cutting short the primary and secondary stages of the disease, but mercury and potassium iodide should always be used for the imperative prolonged treatment.

Fortunately all these drugs are trans-

mitted to the fetus by the placenta, by which means effective treatment may be administered to the child *in utero*. After birth the child should be treated individually, inunctions of mercury being most satisfactory. The mother should always continue treatment and nurse her syphilitic child, who will obtain specific drugs through her milk.

POSTOPERATIVE VENTRAL HERNIAS.

STANTON (*New York State Journal of Medicine*, October, 1916) bases his report upon 500 laparotomies from which there developed 24 hernias. All except 44 of these operations were performed through a midline or rectus incision. All of these hernias developed as the direct result of an insufficiently firm union of the fascia layers lying anterior and posterior to the rectus muscles. The entire problem of a firm scar centers in the stability of the union obtained between the sutured edges of these fascia layers.

Above the semilunar fold of Douglas the posterior sheath is composed of the entire fascia of the transversalis and the posterior half of the fascia of the internal oblique. Below the semilunar fold all of the fascia of the internal oblique and a portion of the fascia of the transversalis pass anterior to the rectus. The older anatomies infer, or state, that all of the fascia of the transversalis passes anterior to the rectus in its lower fourth. This is an error which has been corrected in some of the later anatomies. The posterior sheath even in the lower fourth does contain a fascia layer composed chiefly of fibers of the transversalis. Below as well as above the fold of Douglas this fascia and the peritoneum together form the first line of defense against hernias. The peritoneum alone has little or no strength. If the fascia is not properly united the overlying muscle yields, leaving only the last line of defense—the fascia of the anterior sheath.

Usually the posterior sheath proper is included in the suture which closes the peritoneum, but unless the presence of this fascia is constantly borne in mind it will very frequently be missed. Between it and the peritoneum is a layer of areolar tissue which often contains a half-inch or more of fat. Even in thin people the fascia is often found deeply retracted at the close of the operation. When there is considerable subperitoneal fat it is often better to use a second continuous suture for this fascia.

Infection has long been recognized as the chief cause of a weak postoperative scar. In the series reported 260 rectus and midline incisions in originally clean cases were followed by only three hernias. One of these developed suddenly several months past operation after apparently perfect primary union in a low midline incision; one followed a Cæsarian section in which the wound broke down because of the foul-smelling suppuration caused by a proteus-like organism; and one followed a low right rectus incision in a clean case. The stitches were removed at the end of twelve days. The wound opened immediately. There was at this time no evidence of infection or repair. Four months later the wound was still open, without granulation tissue sufficient to hide the outlines of the muscle fibers. It finally closed some ten months after operation.

One hundred and eighty-six rectus and midline incisions for acute intra-abdominal infections and subacute and chronic conditions requiring drainage resulted in eighteen hernias.

Frank suppuration along the sutured fascia layers was unquestionably the cause of fourteen of the hernias in the total series. In eight of the remaining ten cases some degree of infection was present and probably in part at least responsible for the result. Only one hernia developed in a wound healing by absolute first intention. The part played by drains in the causation of hernias is usually overestimated, certainly so in the case of rectus and midline incisions. A drain up to 3 cms. in diameter at one angle of the wound does not materially increase the danger of hernia. Indeed, since it provides drainage it is a means of preventing rather than causing

hernia. Of 180 midline and rectus incisions in which drainage was employed there were 15 hernias, and in only three of these could the development of hernia be traced to the site of the original drainage. In 12 it was apparently clear that the hernias first developed in the sutured portion of the incisions. A reference to the hospital records in these cases shows ten of the twelve were complicated by well-marked suppuration extending along the fascia layers.

In no case was Stanton able to ascribe a hernia to meteorism. Nor was there a single instance of rectal paralysis due to interference with the nerve supply. The fascia of the posterior sheath is the first line of defense. Suture of the peritoneum does not necessarily mean that the fascia is also sutured.

The author seemed to think that the McBurney incision is more frequently followed by hernia than any other.

USE OF PICRIC ACID IN WAR SURGERY.

On the basis that picric acid is four times more potent than carbolic acid in bactericidal properties, and that a one-per-cent solution kills streptococci and staphylococci in two minutes, BROWN (*Lancet*, Sept. 2, 1916) states that during the Gallipoli campaign, as officer commanding No. 1 Australian Auxiliary Hospital in Egypt, an opportunity presented itself practically to test the value of picric acid in the treatment of over 3000 wounded patients. The medical officers and nursing staff carried out the following routine treatment as far as practicable: To superficial wounds 1 per cent picric acid solution was applied on thin gauze. The wound was thus left practically exposed to the air; usually one dressing per day was sufficient. Suppurating sinuses were treated by syringing with 0.5 to 1 per cent of the solution twice daily, and H_2O_2 solution used every two or three days to remove débris. Arm and leg baths with 0.5-per-cent solution for thirty minutes were used for suppurating fractures and crushed tissues, with an occasional bath of hypertonic saline as a change.

The results were uniformly good, healthy and vigorous granulation and quick recovery taking place. Several cases of septic compound fracture and injuries to bone cleared up in a remarkably short time. Deep septic wounds caused by shrapnel, etc., granulated and were ready for skin-grafting likewise.

It must be noted, however, that they found 1-per-cent solution too strong for the delicate epithelium of new skin, and weaker solutions, 0.5 per cent and 0.2 per cent, were used when the granulations reached the level of the surrounding epidermis. It may be mentioned here that a 0.2-per-cent solution in water and spiritus vini rect. was used in several cases of erysipelas with exlent results.

The following opinions of the properties and value of picric acid solution are based on the cases treated: It kills bacteria without corroding effect and prevents suppuration; it stimulates granulation of the tissue; it has marked anodyne properties, and the need of aspirin or morphia is rare; by dispensing with hot fomentations it saves much time, cotton-wool lint, G. P. tissue, etc.; it is less irritative and more efficacious than iodine; it may be used for sterilization of the skin in surgical cases; it shortens the convalescent period.

The contraindications usually mentioned are the following:

Coagulation of the tissue. This is so slight with the solutions used that it was unnoticeable, and there was no evidence of retardation in the healing of wounds from this cause.

Poisoning effects. In the 3000 cases treated not one showed any signs of poisoning. Moreover, the writer has painted a patient suffering from scarlet fever all over with a 2-per-cent solution without any signs of absorption or poisoning, and believes that it hastened the peeling stage.

Discoloration of the skin. This is very persistent, but the muscles and subcutaneous tissues apparently do not stain.

So far the opportunity has not presented

itself to investigate the result of applying picric acid as a prophylactic in tetanus.

The number of septic wounds arriving at the base calls for more vigorous treatment in proximity to the scene of action. Brown suggests that picric acid be stocked by all dressing stations, clearing hospitals, and field ambulances, if not already in use. A useful form would be compressed tablets, which, when dissolved in 1 ounce of rectified spirit and 9 ounces of water, would form a 2-per-cent solution. This is applied to all wounds on gauze as a first dressing, or when practicable the wound syringed with a 1-per-cent solution and then covered with gauze saturated with a 2-per-cent solution.

POSTOPERATIVE HEAT-STROKE.

MOSCHCOWITZ (*Surgery, Gynecology and Obstetrics,* October, 1916) reports a number of cases, two at least of which seem convincing. He believes that whenever the atmospheric conditions are favorable for the production of insolation, all operating-room activities should cease, with the exception of those of an urgent nature. It is quite within the range of possibility that insolation may occur even in a non-operated individual, but the exhaustion dependent upon the operation is lacking, and may be just the factor which determines the occurrence of insolation, and the success or failure of the treatment instituted.

In all cases operated upon during a hot wave, the greatest regard should be had for the comfort of the patient. As already indicated, all the needless swathing in blankets and hot-water bottles is to be prohibited. On the contrary, at such times coolness and the lightest of covers are indicated. Motor fans are also in order and desirable. Cooling drinks should be permitted much earlier than is generally the custom after operations.

Only that particular form of insolation which is characterized by very high temperatures and which is called "heat-stroke" has been recognized as a postoperative complication. This is perhaps due to a lack of our diagnostic acumen, as it is quite possible that the second variety, or "heat prostration" so called, is the more frequent. While the etiological factor appears to be identical in both, they differ widely in their symptomatology, and what is of the greatest importance also, in the therapy.

In heat-stroke the temperature is so high that every effort should be made to reduce it, and to neutralize its deleterious effects. We cannot avail ourselves in these cases of the antipyretic properties of the coal-tar products, on account of their depressing effect upon the heart. Recourse must be had, therefore, to physical measures to reduce the temperatures. The best of these is hydrotherapy properly executed and carried out, in the form of sponge baths with iced water. An ice-cap applied to the head is not only grateful to the patient, but materially assists in reducing the temperature, and in combating the delirium of the patient. Enemata or Murphy infusions with ice water, coming into contact with a large volume of the superheated blood, should also be tried, and will also be followed by success. This form of treatment would, on the other hand, be entirely contraindicated in that variety of insolation which we call heat prostration. In this form the temperature is not only not elevated, but in many cases is even subnormal. The reverse form of treatment is therefore indicated, namely, the patient should be well covered and surrounded by hot-water bottles; subcutaneous or intravenous saline infusions, or warm rectal infusions, are used.

The rate and quality of the pulse is to be controlled, and forms a valuable guide as to the character and amount of stimulation called for.

In a certain number of cases of insolation there has been found a peculiar degeneration of the blood, which manifests itself by a laking. This suggests the possibility of venesection and blood transfusion, provided a suitable donor can be found at short notice.

REVIEWS.

INDEX-CATALOGUE OF THE LIBRARY OF THE SURGEON-GENERAL'S OFFICE, UNITED STATES ARMY. Authors and Subjects. Volume 21. Waterworth-Zysman. Government Printing Office, Washington, 1916.

This issue of the Index-Catalogue, already known to all men in this country and abroad who work in medical literature, contains 7211 author titles, representing 4971 volumes and 5496 pamphlets. It also contains 2026 subject titles of separate books and pamphlets and 12,175 titles of articles in periodicals. The library of the Surgeon-General's office now contains 224,522 volumes, bound and unbound, 337,120 pamphlets, or a total of 561,642. Exclusive of transactions of societies, the number of current periodicals at present on file in the library is 1895. The present volume completes the Second Series of the Index-Catalogue, comprises 21 volumes, or a total of 37 volumes in the First and Second Series. Not only the medical profession of the world, but the whole country, is to be congratulated upon the maintenance and successful carrying out of this noble work.

PHARMACOLOGY AND THERAPEUTICS. For Students and Practitioners of Medicine. By Horatio C. Wood, Jr., M.D. Second Edition. J. B. Lippincott Company, Philadelphia, 1916. Price $4.00.

The second edition of Dr. Wood's book is somewhat larger than the first. It opens with a chapter upon Elementary Facts Dealing with Pharmacology and Therapeutics, and then continues with various chapters in which drugs are classified according to what is believed to be their physiological action. Thus, there are chapters upon Drugs Used to Affect Secretion; Drugs Used to Affect the Nervous System; to Affect the Circulation; the Alimentary Tract; the Metabolic Processes; Drugs which Act on the Causes of Disease; Extraneous Remedies; and Drugs of Minor Importance.

Much can be said for and against the classification of drugs by the arbitrary methods which are essential if any attempt at classification is made. It would seem rather an artificial classification to put mineral acids and the digestive ferments under the class of Extraneous Remedies when the thyroid gland is put in another classification. The book deals more largely with the pharmacology of drugs than it does with their clinical application.

An interesting and attractive feature of the book is the frequent use of the pronoun "I" by the author, whereby a personal quality is given to the text. Wherever it is thought necessary the author introduces references to papers which he considers of great importance in connection with the drug which is under discussion.

The volume is one which reflects credit upon a name which for nearly one hundred years has been intimately associated with materia medica and therapeutics in American medicine.

A PRACTICAL MEDICAL DICTIONARY. By Thomas Lathrop Stedman, A.M., M.D. Fourth Edition, Revised, Illustrated. William Wood & Company, New York, 1916. Price $5.00.

Few men of the medical world have had larger editorial experience than Dr. Stedman, who has been the Editor of the Twentieth Century Practice of Medicine, of the Reference Handbook of the Medical Sciences, and is at present Editor of the *New York Medical Record*.

The present volume appears in a flexible binding and is good to look upon. It appears two years after the third edition. Special attention has been paid to the names of authors of tests, discoverers of reflexes, and inventors of surgical or other procedures. The domain of radioactivity has been culled and nearly two thousand new terms have been added to the present volume.

In earlier editions the terms of the Basle Anatomical Nomenclature (B N A) were indicated only when they differed from those in common use, but in the present edition it has been thought best to mark all of these terms, and for this purpose anatomical assistance has been called upon by the author.

The paper used in the volume is thin but tough, and therefore ought to wear well.

The register does not show through, and the type is sufficiently large to make reading of the definitions easy.

As a specimen of literary work and a sample of book-making it can be most highly commended.

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by H. A. Hare, M.D., Assisted by L. F. Appleman, M.D. Volume 4, 1916. Lea & Febiger, Philadelphia, 1916.

The contributors to the December issue of Progressive Medicine are J. Harold Austin, Associate in Medicine in the University of Pennsylvania, who writes the article upon Diseases of the Kidneys; Edward H. Goodman, also an Associate in Medicine in the University of Pennsylvania, who contributes that upon Diseases of the Digestive Tract and Allied Organs; Charles W. Bonney, who contributes the article upon Diseases of the Genito-Urinary Tract; Joseph C. Bloodgood, Associate Professor of Surgery in the Johns Hopkins University, who writes upon Surgery of the Extremities, Shock, Anesthesia, Infections, Fractures and Dislocations, and Tumors; and, finally, a Practical Therapeutic Referendum, summing up most of the articles of importance appearing during the year, compiled by H. R. M. Landis, who is Director of the Clinical Department of the Henry Phipps Institute. These articles have all been written with the idea that the author impresses his personal opinion upon their pages as well as quotes the opinions of those who contribute the articles which he dissects and abstracts.

A TEXT-BOOK OF HISTOLOGY. By Frederick R. Bailey, A.M., M.D. Fifth Revised Edition, Profusely Illustrated. William Wood & Company, New York, 1916. Price $3.75.

This very excellent book of histology was warmly admired when it appeared in its first edition, and it is worthy of note that it has proved so popular as to reach a fifth edition within a very short time, considering the fact that comparatively few active practitioners have use for such a volume and that its chief sale must be amongst students. The illustrations are remarkably clear and good. In addition to the description of the tissues which are shown, there are also definite and accurate directions as to the technique which should be employed in the staining and examination of the chief tissues.

BLOOD-PRESSURE FROM A CLINICAL STANDPOINT. By Francis Ashley Faught, M.D. Second Edition, Illustrated. W. B. Saunders Company, Philadelphia, 1916. Price $3.25.

This very excellent summarization of the literature concerning a large and important topic has now appeared in its second edition. In addition to giving many references dealing with this subject, the author does not hesitate, from time to time, to express his own individual opinion as to the conditions which are indicated by, or which are to be studied through, estimations of blood-pressure. The book is somewhat larger than need be by reason of its large type and the wide spacing of the lines. These qualities, however, make it easy reading. It has been brought up to date and deserves to be well received by the profession.

THE PRACTICAL MEDICINE SERIES. Under the General Editorial Charge of Charles L. Mix, A.M., M.D. Volume V, Pediatrics. Edited by Isaac A. Abt, M.D., with the Collaboration of A. Levinson, M.D. Orthopedic Surgery, Edited by John Ridlon, A.M., M.D., with the Collaboration of Charles A. Parker, M.D. Series 1916. Chicago: The Year Book Publishers, 1916. Price $1.35.

In admirably done portions of this work we find sections devoted to Metabolism, Feeding, Infant Welfare, Pyloric Stenosis, Duodenal Ulcer, Intestinal Invagination, Disorders of Nutrition, Schick Test, Poliomyelitis, Syphilis, Tuberculosis, Respiratory Diseases, Blood Transfusion, Colon Disease, Disease of the Urinary Organs; Heart Disease; Rheumatism; Disease of the Nervous System; Tumors; under each heading giving a brief but excellent summary of the important contributions during the last year. Ridlon and Parker's résumé of Orthopedic Surgery is equally commendable.

Dislocation of the Hip; Hip Disease; Arthritis; Pott's Disease; Scoliosis; Painful

Back; Infantile Paralysis; Flatfoot; and a brief section on Fractures—these are the subjects lightly touched upon.

CONSTIPATION, OBSTIPATION, AND INTESTINAL STASIS. By Samuel Goodwin Gant, M.D., LL.D. Second Edition, Enlarged. Illustrated. W. B. Saunders Company, Philadelphia and London, 1916. Price, cloth $6; half-morroco, $7.50 net.

The call for a second edition of this excellent book indicates the favor with which it has been received in the past and the confidence of the profession in the author's thorough revision and recognition of modern methods. He states that drugs are very rarely employed by him in the curative treatment of constipation. He discusses the functional, prophylactic, psychic, dietetic, physical, and medicinal treatment of chronic constipation; after which separate chapters are devoted to the treatment of complications, spastic constipation, acute constipation, and the constipation of infants and children. There are brief introductory chapters upon Anatomy and Physiology. Thereafter there is devoted space to the Etiology, followed by Symptomatology, and, finally, by a very elaborate therapy, Internal and External Hydrotherapy being given much space. Massage and Vibrations are carefully described, together with the use of Electricity and other Physical and Therapeutic Procedures. There is a chapter of some length devoted to the Medical Treatment of Constipation, together with many admirable prescriptions. The latter end of the book is mainly surgical.

THE PRACTITIONER'S VISITING LIST FOR 1917. Lea & Febiger, Philadelphia, 1917. Price $1.25.

This so-called "Practitioner's Visiting List," which has now been published for many years by Lea & Febiger, appears in the same form as heretofore. To be more exact it appears in four styles: weekly, dated, for thirty patients; monthly, undated, for 120 patients per month; perpetual, undated, for thirty patients weekly; or "sixty patients" undated for 60 patients weekly per year. The preliminary matter contains a scale of dentition, weights and measures, instructions for examination of the urine, diagnosis of eruptive fevers, incompatibilities, etc.

CORRESPONDENCE.

LONDON LETTER.

BY J. CHARLTON BRISCOE, M.D.

As autumn passes into winter, the natural sequence of shorter days becomes obvious. This is more noticeable this year than last, owing to the greater stringency of the lighting orders. London streets are indeed very dark, as it is not permissible for any light to show which is sufficiently strong to illuminate, however slightly, the opposite side of the roadway. This is of very little material consequence when the atmosphere is clear, but with the development of fogs, and we have already experienced several in this present month, passing along the streets is worse than walking along a country lane at night, and is much worse than fogs in former years when the streets were well lighted. The reason for this is that as you walk along the street you come into an area of light thrown downward from the street lamp, and then immediately proceed into an area in which no light is shown, the result being that your eyes are dazzled just as they are when passing a motor car with bright lights in the country. Efforts were made to whiten the edges of the curbs of the pavements in order to indicate where to step down or up, but with damp fog and muddy streets this is very quickly obliterated, so that the attempt is not so frequently made now as a few weeks ago. The fall of rain also tends to obliterate these white marks. Rain itself has not been so notice-

able during the past month until last week, when it was very heavy. On November 19 there was a sharp fall of snow, amounting to several feet in some of the northern parts of the country, but only to the extent of a few inches nearer London. It was followed by twelve hours of rain, and as a consequence did not lie at all, but following the snow and rain the atmosphere has been quite heavy and there is a tendency to the continuance of fogs.

Military patients keep coming over, but care at the front seems to have eliminated the more serious diseases. There have not been so many patients with albumen, and I have seen none with trench feet. There seems to be considerably more shell-shock than formerly, and it is just a question as to what extent and in what time these patients recover. The general experience is that the older they are the less chance there is of their recovering sufficiently to return to the front, and the greater time required before that event is possible. Recurrent headaches seem to be the characteristic phenomena of the condition, and it is well to have any errors of refraction corrected in order to get this condition relieved. This and sleeplessness are the most troublesome symptoms. Occasionally, however, peculiar symptoms show themselves. I recently had under my care an officer suffering from shell-shock who was a good golfer with a handicap of +2. When he had recovered from the severe symptoms of the condition, he was sent off into the country to play golf. Although a 13-stone man of very fine physique, he was at first completely done up at the end of nine holes, and it was not until after a month that he could get through a complete round. He was considerably annoyed by his game, as he was continually beaten by an 18-handicap man playing on level terms. He could get to the green in the regulation number of strokes, but although having been a very fine putter previously, he had entirely lost his touch, and confessed that when he struck the ball his direction was always good, but he had no notion whether the ball was going 5 feet or 15 yards, and he nearly always took four strokes to hole out. This part of his game has commenced to improve, but only after two months on the links. He took it all in good part, or otherwise the annoyance might have been an adverse factor in his case.

The war is very naturally causing a considerable amount of embarrassment to the London hospitals. Rent, rates, and taxes remain about the same, but everything else seems to have risen—not only food, but drugs, dressings, and wages. Owing to the increased cost of living, practically all permanent officials, porters, and so forth have been granted a war bonus especially to provide for this increased cost of food. Younger hands have been called up, being replaced by older men and a certain number of women, but in many cases where this has happened a weekly grant is given to those with the colors to supplement the army allowance. In those hospitals where resident medical officers receive a salary, the rate of remuneration has had to be raised in order to secure resident medical officers, and it seems likely that such rates will eventually reach those paid to the medical officers in the R. A. M. C. A few of the hospitals are in the fortunate position of being endowed with a sufficient permanent income to provide for the increased cost, but the less fortunate ones are affected by the falling off of subscriptions actual or relative, and if hostilities continue will be hard put to it to keep going. It is naturally difficult to raise money for these charitable institutions when there are so many other calls on charity, and especially when such calls are connected with the effects of war. It is therefore all the more to be hoped that the King Edward's Hospital Fund, the Hospital Sunday and Hospital Saturday Fund will be well supported, and will be able to keep their grants up to the usual level. In some quarters there is considerable talk of state subsidy for some or all of the hospitals, but no public statement has so far been made in this connection.

The subject of venereal disease, and the arrangements made to cope with it both now and in the future, is still the most

important medical subject before the public, and every day letters appear in the daily papers bearing on this point. While the majority of these letters are written by those who wish to associate themselves, but are somewhat belated, with the movement and advocate an energetic programme, it is noticeable that they all fight shy of notification of this disease. This aspect has been studiously avoided in all schemes, but it seems to be one that will ultimately have to be dealt with, although popular opinion at the present time seems to be against it. It seems very doubtful if this condition will ever be eradicated without some compulsory form of treatment and notification, however much the public may be educated as regards the consequences which may arise. I understand that the County Council have now elaborated their scheme and have practically concluded arrangements with the different centers in London where treatment may be obtained. Grants will be made to these centers, which will be left to disburse the money at their own discretion, the County Council only requiring that the work should be satisfactorily carried out. The great principle is that all treatment and examination should be free, and in this respect an interesting position arises with regard to those hospitals which have specially laid themselves out for the treatment of the conditions, but where the institutions have been self-supporting owing to the fact that each patient contributes to the cost of maintaining the institution. It will obviously require a much larger grant than that allowed some of the general hospitals where the diseases have only been treated in the ordinary hospital routine, and where no payment has been made. We have not yet heard how this situation will be dealt with.

Attention has recently been called to another branch of public health, viz., the arrangements made for the provision of midwives throughout the country. A large number of nurses after their training take some diploma in midwifery, but in their case the diploma stands very much in the same relationship as a diploma of public health does to a large number of medical men who go into practice. It rounds off a course of study, but does not necessarily imply that the owner intends to practice exclusively in that branch of the subject. In the last year or two the number of those who intend to devote themselves to this branch of nursing has been limited. At the present time it does not seem to attract sufficient numbers, and the dearth is being felt throughout the country. It is largely a matter of payment. In some of the outlying country districts the fee varies from 5s. to 7s. 6d. per case, which would represent an income of a little over £13 in a year. In these country districts accommodation is provided for the nurses when off duty and food when not attending cases, but the sum is of course absurd, and at the present time offers no attractions. This is of course the worse side of the picture. In some towns it is just possible that nurses could earn a little more than £100 a year, but even that amount does not compare with sums that are earned in some munitions factories. The Local Government Board are now taking the matter in hand with the object of establishing efficient midwifery centers throughout the country, and are giving grants to the County Nursing Association with respect to this work. The town of Bradford, which has always been to the fore in public health, is now advertising for a municipal midwife. It is only reasonable that the state, which has always taken such a great interest in the death of its members, should now turn its attention to securing better conditions for their birth. The first step toward instituting an efficient service of fully trained midwives is obviously to see that the present staff is contented, an object which would be best achieved by undertaking that they receive a proper salary and proper recognition.